STANDARD BIDDING DOCUMENTS

GUYANA POWER AND LIGHT INC

Procurement of Reinforced Concrete Poles

IFB # GPL- PI - 026 - 2014

March 2014

Closing Date: 24/04/2014 @ 14:00 hrs or 2:00pm
Bid Opening: 24/04/2014 @ 14:30 hrs or 2:30pm

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INVITATION FOR BIDS
(IFB) No: GPL – PI – 026 – 2014

The Guyana Power and Light Incorporated (GPL) invites sealed bids from eligible bidders for the **Procurement of Reinforced Concrete Poles** to be used in its operations**.**

1. A complete set of bid documents can be purchased for a non refundable fee of G$4,000. From the Secretary- Procurement and Inventory Accounting Manager, Guyana Power and Light Inc., 40 Main Street, Georgetown or a copy can be downloaded from our website http://www.gplinc.com

2. Tenders must be submitted with a valid **National Insurance (NIS), Inland Revenue (GRA) Compliance Certificates, Business Registration(companies)** and deposited in the Tender Box located at GPL's Board Room 91 Duke Street Kingston Georgetown Guyana.

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

4. Bids shall be valid for 90 days after the date of bid opening.

5. Bid envelopes must be addressed as follows;
   Bid for the Procurement of Reinforced Concrete Poles - GPL – PI – 026 – 2014

   The Secretary to the Tender Board
   Guyana Power and Light Incorporated.
   91 Duke Street, Kingston, Georgetown

   Deadline for submission of bids is 14:00 hrs (2.00 pm) on Thursday 24th , April 2014.

6. Bid opening is scheduled for 14:30 hrs (2:30 pm) on Thursday 24th April 2014 at GPL's Board Room 91 Duke Street, Kingston, Georgetown, Guyana in the presence of Bidders/ Representatives who choose to attend.

7. **IMPORTANT:** Bidders downloading the bid document are required to register at sogle@gplinc.com, procurementofficer@gplinc.com stating the following, name of bidder, address, contact no. and email address.

8. Guyana Power and Light Incorporated reserves the right to reject any or all bids.

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INSTRUCTIONS TO BIDDERS

A. Introduction

1. Description of the Procurement

The Procuring Entity is Guyana Power and Light, Inc who intends to procure the goods identified in the *Bid Data Sheet* and in the Schedule of Requirements.

2. Eligibility and qualifications of Bidders

2.1 In order to be awarded a procurement contract, Bidders should possess the technical and financial capacity needed to perform the contract, should fulfill their tax and social insurance fund liabilities in Guyana, and should not currently be subject to a debarment penalty, and must comply with the specific eligibility and qualification requirements referred to in the *Bid Data Sheet*. Bidders shall provide the information and any supporting documentation required by the Qualification Information Form.

2.2 The bidders should not have a conflict of interests, including involvement in more than one bid in this proceeding, should not be associated nor have been associated in the past, directly or indirectly, with any agency or any of its representative, affiliate, that have been engaged by the Procuring Entity to provide consulting services at the preparation stage of the bidding documents, technical specifications and other documentation that are subject to be used in the procurement of goods which must be purchased in accordance with the Invitation for Bids. In case when the indicated facts are discovered, the Bidder's bid shall be rejected.

B. Bidding Documents

3. Clarification and amendment of bidding Documents

3.1 The Procuring Entity, in not more than three (3) working days, will respond in writing (including by fax or electronic mail) to any request for clarification of the bidding documents to be received (in writing, including by fax or electronic mail) not later than 10 days before the expiry of a deadline for submission of bids. At the same time, the Procuring Entity's response shall without identifying its source of the request, be distributed to all bidders who have received the bidding documents from the Procuring Entity.

3.2 At any time before the deadline for submission of bids, the Procuring Entity may amend the bidding documents by issuing an Addendum and notifying it to the bidders.

C. Preparation of Bid

4. Language of Bid

4.1 The bid prepared by the Bidder, as well as all correspondence and documents related to that bid and exchanged by the Bidder and the Procuring Entity shall be written in the language *specified in the Bid Data Sheet*.

5. Documents Included in Bid

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5.1 The bid prepared by the Bidder should contain the Form of Bid, the Price Schedules and the other documents to be submitted in accordance with these Instructions to Bidders.

6. Bid Price

6.1. Subject to the choice of INCOTERMS as indicated in the Bid Data Sheet, the prices given in the Price Schedule shall include all transportation costs to the destination point indicated in the Contract, all taxes, duties, payments collected, in accordance with the laws of Guyana and delivery related and other costs on performing of contractual obligations.

6.2. The prices offered by the Bidders shall remain fixed during the whole period of Contract performance and shall not be modified in any circumstance.

7. Bid and Payment Currency

7.1 The prices shall be indicated in Guyana Dollars, unless otherwise specified in the *Bid* Data Sheet.

8. Bid Security / Bid Securing Declaration

8.1 Unless otherwise provided in the *Bid Data Sheet*, the Bidder shall furnish, as part of his bid, a Bid Security, in the form, currency and amount specified in the *Bid Data Sheet* with a validity period for not less than 2 weeks upon the expiry of the bid validity period and in line with the form in Annex 11, or, if so indicated in the BDS, a Bid Securing Declaration in accordance with the form in Annex 12.

8.2 The bid security may be forfeited, or the Bid Securing Declaration executed, if the Bidder:

(a) withdraws his/her bid after it is opened during the period of validity specified in the bid; or,

(b) having been awarded the contract fails:

(1) to sign the contract on the terms and conditions provided in his bid; or

(2) to furnish the Performance Security, if required to do so.

9. Period of Validity of Bid

9.1 Bids shall remain in force during the period specified in *the Bid Data Sheet* after the date of bid opening.

10. Format, Signing and submission of Bid

10.1 The Bidder shall prepare an original and 2 (two) copies of the bid, which shall be typed or written in indelible ink, and shall be signed by the Bidder, or by the person (persons) duly authorized to sign the bid in accordance with the power of attorney to be submitted with the bid. All pages of the bid where new information, modifications or erasures entered shall be

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initialed (signed) by the person or persons signing the bid. In the event of discrepancies between them, the original shall prevail.

10.2 The bid shall contain no interlineations, erasures or overwriting, except the cases when the Bidder needs to correct errors which must be initialed by the person or persons signing the bid.

10.3 The Bidder shall seal the original and each copy of the bid in different envelopes, marking them "**ORIGINAL**" and "**COPY**", as appropriate. The envelopes shall then be sealed in an outer envelope.

10.4 The inner and outer envelopes shall:

(a) be addressed to the Procuring Entity at the address specified in the Invitation for Bids;

(b) bear the Invitation for Bids (IFB) title and number and the words: "**DO NOT OPEN BEFORE**," **14:30hrs on Thursday 24th, April 2014.**

(c) indicate the name and address of the Bidder.

11. Deadline for Submission of Bids

11.1 Bids must be received by the Procuring Entity at the address and within the periods specified in *the Bid Data Sheet.* All bids received by the Procuring Entity upon the expiry of a period established for submission of bids as indicated by the Procuring Entity shall be rejected and returned to the Bidder unopened.

12. Modification and Withdrawal of Bids

12.1 The Bidder may modify or withdraw his bid after the bid's submission, provided that the Procuring Entity will receive a written notice of modification, including substitution or withdrawal of bid until the expiry of established period for submission of bids.

12.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and sent in accordance with the provisions of ITB Clause 10. In that case the outer and inner envelopes will be additionally marked as "**MODIFICATION**" or "**WITHDRAWAL**", as appropriate. A withdrawal notice may also be sent as a telegram by telex or fax with a subsequent written confirmation by post-office not later than the deadline for submission of bids.

E. Opening and Evaluation of Bids

13. Opening of Bids

13.1 The Procuring Entity will open all bids in the presence of bidders' representatives who wish to attend, at the time, on the date, and at the address specified in the *Bid Data Sheet***.** The bidders' representatives who are present shall sign a register evidencing their attendance.

13.2 The bidders' names, bid prices, including alternatives (if alternatives permitted), information on the presence or absence of required bid security, or bid securing declaration, information on the presence (absence) of tax debts and debts of social insurance payments will be announced at the opening. No bid may be rejected at the opening, exclusive of late bids to be

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returned to the Bidder unopened.

13.3 Bids (and modifications sent pursuant to ITB Clause 12.2 that are not opened and read out during the bid opening shall not be accepted for further evaluation, regardless of circumstances.

14. Evaluation of Bids

14.1 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.

14.2 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.

14.3 The Procuring Entity may waive any minor nonconformity, or small mistake or inaccuracy in the bid which are 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).

14.4 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 amount in words shall be preferable. If the Bidder disagrees with such correction of errors, his bid shall be rejected.

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

14.6 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.

15. Confidentiality and Contacting the Procuring Entity

15.1 No Bidder shall contact the Procuring Entity on any matter related to his 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.

15.2 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

16. Award Criteria

16.1 Subject to ITB Clause 18, the Procuring Entity will award the Contract to the Bidder whose bid is determined to be substantially responsive to the requirements of the bidding documents, and who offered **the Lowest Evaluated Bid**, provided that the Bidder has been determined:

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(a) to be eligible pursuant to Clause 2;
(b) to comply with qualification requirements, in accordance with Clause 2, and any technical requirements and technical evaluation criteria disclosed in the bidding documents.

17. Procuring Entity's Right to Vary Quantities at Time of Entering into a Contract

17.1 The Procuring Entity reserves the right, when entering into a contract, to increase or decrease the quantity of goods and related services specified in the Schedule of Requirements, by the percentage indicated in the *Bid Data Sheet***,** no change in the unit price or other conditions shall be made (an increase of quantity not exceeding 15 ***percent variation***).

18. Procuring Entity's Right to Accept Any Bid and to Reject All Bids

18.1 The Procuring Entity reserves the right to accept or reject any bid or all bids, and to cancel the bidding process at any time prior to award of contract, without thereby incurring any liability to Bidders and without being required to inform the Bidder or Bidders of reasons of such actions.

19. Notification of Award

19.1. The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period.

19.2. The notice of acceptance shall be equal to entering into a Contract, provided that the Bidder furnishes the performance security and the signed Contract.

19.3. At the same time that the Procuring Entity notifies the successful Bidder in accordance with sub-clause (1), the Procuring Entity will notify all other Bidders of the name of successful Bidder, and his bid price.

19.4 The evaluation report and comparison of bids will not be sent to bidders.

20. Signing of Contract and performance security

20.1 At the same time with notification of award, the Procuring Entity will send the successful Bidder the Form of Contract contained in the bidding documents. The successful Bidder shall sign and date the Contract, and return it to the Procuring Entity during seven (7) days of receipt of notice of award.

20.2 Together with the signed Contract, the Bidder shall, if required to do so by the *Bid Data Sheet*, furnish the Procuring Entity with a Performance Security in the amount and form specified in the *Bid Data Sheet*.

20.3 If the successful Bidder fails to furnish the performance security, if required to do so, or during 7 (seven) days fails to return the Contract signed by him, then it shall be a sufficient ground to refuse the award of Contract, and to forfeit the bid security, or execute the bid-securing declaration. In that case the Procuring Entity shall award the Contract to the next lowest evaluated Bidder, subject to the right of the Procuring Entity to reject all bids.

21. Settlement of disputes

21.1 To settle the disputes which may arise during the execution of Contract, the parties shall follow the procedure referred to in the *Bid Data Sheet*.

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22. Corrupt and Fraudulent Practices

22.1 The Procuring Entity requires that Bidders observe the highest standards of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Procuring Entity:

(a) will reject the bid if it establishes that the Bidder recommended for award has engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract in question;

(b) will declare the Supplier, for indefinite or specified period of time, to be ineligible to participate in state-financed biddings, in accordance with applicable debarment procedures.

23. Compliances

23.1 Bidder registered in Guyana must submit valid certificates of compliances from Guyana Revenue Authority (GRA), National Insurance Scheme (NIS), and (VAT registration is required only if item being supplied is Vatable).

24. Defects Liability:

24.1 The "Defects Liability Period" for the goods and related services is 12 months from the date of taking over possession or such other period as may be specified in the Bid Data Sheet. During this period, the supplier will be responsible for replacing any defective items free of cost to the Procuring Entity.

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Bid Data Sheet (BDS)

The following specific data to clauses of the provisions of Instructions to Bidders which supplement, or amend the provisions of the Instructions to Bidders (ITB) Whenever there is a conflict, the provisions herein shall prevail over those in ITB

Item No.	
ITB 1.1	Guyana Power and Light ,Inc of 40 Main Street Georgetown Guyana Telephone#592 22 69598 Email: sogle@gplinc.com procurementofficer@gplinc.com Cc: supv_procurement@gplinc.com The subject of the procurement is: **Procurement of Reinforced Concrete Poles**
ITB 2.1	To qualify for award of the Contract , the bidders shall provide satisfactory evidence to the Purchaser of their capability and adequacy of resources to carry out the Contract effectively: (a) Copies of original documents defining the constitution or legal status, place of registration and principal place of business. (b) Experience as a continuous supplier of reinforced concrete poles for more than 2 (two) years (c) Average Turnover for the last three years should be at least twice the bid value (d) Evidence of access to lines of credit and availability of other financial resources. (e) Evidence of compliance with NIS, IRD and VAT registration for Vatable items
ITB 4.1	Language of Bid shall be English
ITB 5.1	Other documents to be submitted includes; GRA and NIS Compliances, **(TIN Certificate)**
ITB 6.1	The price quoted by bidders shall be based on the landed price for delivery to the locations and for ramping the poles
ITB 7.1(a)	For Goods and Related Services with origin in the Purchaser's country, the currency of the bid shall be Guyana Dollars (GY$). Bidders registered in Guyana MUST submit their bid in Guyana Dollars. All other bidders may submit their bid in United States Dollars, Pound Sterling, Euros or a freely convertible currency accepted by the Purchaser.

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ITB 8.1	A bid security of 2% of the tendered sum is required.
ITB 9.1	The period of validity of bid is 90 Days
ITB 11.1	Deadline and place for submission of bids: 14:00 hours on Thursday, 26th, April 2014. Attention: Secretary to the Tender Board ,Guyana Power and Light ,Inc 91 Duke Street, Kingston, Georgetown, Guyana, South America
ITB 13.1	Time and place for opening of bids is:14:30 hours on Thursday 26th, April 2014 at The Board Room, Guyana Power and Light, Inc ,91 Duke Street, Kingston, Georgetown, Guyana ,South America
ITB 17.1	When entering into a contract the Procuring Entity reserves the right to Increase or decrease the quantity of goods by 15% without affecting the prices submitted by the Bidder
ITB 20.2	The performance security shall be 10% of the Contract Price and in the form of a Bank Guarantee
ITB 21.1	Disputes that may arise in the performance of the contract shall be settled in accordance with the Procurement Act 2003
ITB 24.1	The duration of the defects liability period is (12 Months) following provisional acceptance of the Goods.

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General Conditions of Contract (GCC)

The General Conditions are the Standard General Conditions of Contract. No alteration shall be made on the pages of these Conditions. The Procuring Entity, when amending or supplementing the General Conditions of Contract should do so only in the Special Conditions of Contract. Any amendment or addenda of the General Conditions of Contract shall conform to the legislation of Guyana.

1. Definitions and application

1.1 This Contract lists below the terms that have the following interpretation:

(a) "**Contract**" means the agreement entered into between the Procuring Entity and the Supplier, as recorded in the Form of Contract signed by the parties, including all attachments and appendices thereto and all the documents referenced therein;

(b) "**Contract Price**" means the price payable to the Supplier under the Contract for complete and proper performance of his contractual obligations;

(c) "**Goods**" means the item(s) referred to in the SCC;

(d) **«GCC» -** means the General Conditions of Contract contained in this Section;

(e) **"SCC» -** means the Special Conditions of Contract;

(f) **"Procuring Entity"** – means the Procuring entity carrying out the procurement of Goods, specified in the SCC;

(g) **"Supplier"** – means an individual or legal entity, or a combination of any above mentioned forms which operate under the existing agreement as a joint venture and supply the Goods and Services under the Contract;

(h) **"Day"** –means calendar day.

1.2 The General Conditions of Contract shall apply in the procurement of goods; the specific amendment, addition and alteration shall be indicated in the Special Conditions of Contract.

1.3 Warrant requirements are as may be specified in the special conditions of contract.

2. Contract Documents

2.1 Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The contract shall be read as a whole.

2. Performance Security

3.1 If required by the SCC, during seven (7) days of receipt of notification of award, the successful Bidder shall furnish the Procuring Entity with the performance security the amount and form

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of which are indicated in the SCC.

4. Packing

4.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to final destination specified in the Contract, and as may be required by the Special Conditions of Contract.

5. Delivery, Transportation, Mobilization Advance

5.1 The Supplier must deliver the Goods within the periods and to the Destination point indicated in the Schedule of Requirements and shall provide the documentation indicated in the SCC. Subject to the SCC, transportation of the Goods to the place specified by the Procuring Entity shall be carried out and paid by the Supplier, and related costs shall be included in the Contract Price.

5.2 Except where the related works involve civil works, a mobilization advance of twenty (20) percent of the cost of the civil works shall apply.

6. Payment

6.1 The payment to the Supplier for the Goods delivered shall be made in accordance with the Contract in the form and within the periods specified in the SCC**.**

6.2 If the Procuring Entity does not pay the Supplier the sum due within the periods specified in the Contract, in that case the Procuring Entity shall pay the Supplier [interest at the rate specified or determined pursuant to the Special Conditions of Contract].

7. Prices

7.1 Prices established by the Supplier in the Contract for goods delivered shall not vary from the prices quoted by the Supplier in his bid.

8. Assignment

8.1 The Supplier shall not assign, in whole or in part, his obligations under the Contract to the third party for the execution without the Procuring Entity's prior written consent.

9. Delays in the Supplier's Performance and liquidated damages

9.1 Delivery of the Goods shall be carried out by the Supplier, in accordance with the schedule indicated by the Procuring Entity in the Delivery *Schedule.*

9.2 Except for provided under GCC Clause 13, the delay in the Supplier's performance of his delivery obligations shall render the Supplier liable for payment of liquidated damages in the amount specified in the SCC, unless an extension of time is agreed upon by the parties without application of liquidated damages. Once the maximum deduction specified in the SCC is reached, the Procuring Entity may consider termination of the Contract, in accordance with Clause 10 of the General Conditions of Contract.

10. Termination

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10.1 The Procuring Entity, without detriment to any other sanctions of infringement of the provisions of Contract, by written notice of default sent to the Supplier, may terminate this Contract in whole or in part:

(a) if the Supplier fails to deliver the portion or all of the Goods within the periods provided for in the Contract, or within an extension period of that Contract, or to perform any of his obligations under the Contract;

(b) if bankruptcy procedures are applied to the Supplier, or it is declared insolvent.

(c) if the Supplier, in the Procuring Entity's opinion, has engaged in corrupt, fraudulent, collusive or coercive practices when entering into or executing the Contract;

(f) If the Procuring Entity deems that continued implementation of the contract would no longer be expedient from the standpoint of the public interest

10.2 The notice of termination shall specify the reason of termination, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

10.3 Notwithstanding clauses 9 and 10.1, the Supplier shall not forfeit his performance security, and shall not be liable for payment of liquidated damages, or termination for default, if delay in executing the Contract or failure to perform obligations under the Contract is the result of an event of force majeure. When force majeure arises, the Supplier shall promptly notify the Procuring Entity in writing of such circumstance and its causes.

10.4 When the contract is terminated in accordance with clause 10.1(d), the Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier's receipt of notice of termination shall be accepted by the Procuring Entity at the Contract terms and prices. For the remaining Goods, the Procuring Entity may elect:

(a) to have any portion completed and delivered at the Contract terms and prices; and/or

(b) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Related Services and for materials and parts previously procured by the Supplier.

11. Settlement of Disputes

11.1 If any dispute or disagreement arises between the Procuring Entity and the Supplier for the Contract or in connection with it, the parties shall make every effort to resolve the dispute or disagreement amicably by mutual consultation.

11.2 If during twenty one (21) days, the parties failed to resolve their dispute or disagreement by mutual consultation; either the Procuring Entity or the Supplier may send the other party the notice of intent to commence arbitration, if an arbitration is incorporated in the Contract in the Special Conditions of Contract or otherwise agreed by the parties, or in the Court of General Jurisdiction if no arbitration is envisaged, and no arbitration or litigation in respect of that matter may be commenced unless such notice is given.

Any dispute or disagreement in respect of which the notice of intent is sent to commence trial shall be heard by the [Court of General Jurisdiction].

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11.3 Notwithstanding any reference to dispute settlement herein, the parties shall continue to perform their obligations under the Contract, unless they agree otherwise.

12. Applicable Law

12.1 The Contract shall be interpreted in accordance with the laws of Guyana.

13. Formal Communication between the Procuring Entity and the Supplier

13.1 Any notice given by one party to the other pursuant to the Contract shall be in force if it is done in writing and sent at the address of other party in the SCC**.**

13.2 A notice shall be effective when delivered or on the specified date, whichever is later.

14. Taxes and Duties

14.1 The Supplier shall be fully responsible for all taxes, duties, license taxes, etc., levied in accordance with the legislation of Guyana, and subject to the application of INCOTERMS in accordance with the SCC except where such taxes and duties may be waived by the Guyana Revenue Authority

15. Retention

15.1 No retention shall be applied on consumables, but warranties, guarantees and expiry dates to apply.

15.2 Retention on fixed assets shall be determined by the procuring entity on a case by case basis.

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Special Conditions of Contract (SCC)

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract.

GCC Clause No.	Special Conditions of Contract
1 **1.1 (f)** **1.1 (g)** **1.1(c)**	**Definitions** The Procuring Entity is Guyana Power and light of 40 Main Street Georgetown Guyana South America, Tele #592 22-69598,*Fax#592 227-2180 Email;sogle@gplinc.com* The Supplier is **Pending Contract Award** *(indicate full name, legal address, phone, fax and e-mail of Supplier)* The Subject of procurement is **Procurement of Reinforced Concrete Poles**
3.1	A Performance Security will be required ten (10) days after receipt of notification award in the amount and form of a Bank Guarantee or Bond not exceed ten *(10) percent of the Contract price* _____]
4.1	**Packing** The packing, marking and documentation within and outside the packages shall be: <u>Packing</u> The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures during transit, and open storage. During Packing consideration should be given to, where appropriate, the remoteness of the Goods' final destination.. <u>Marking</u> Any Marking shall be in accordance with statutory and local practice and shall be agreed with the Purchaser.
5.1	**Delivery, Transportation** <u>Documentation</u> (a)For Imported Goods. Within 24 hours of shipment, the Supplier shall notify the Purchaser and the Insurance Company by cable or telex or fax, the full details of the shipment including Contract number, description of Goods, quantity, the vessel, the bill of lading number and date, port of loading, date of shipment, port of discharge, etc. **The Supplier shall mail the following Original documents to the Purchaser:** (1) Supplier's invoice indicating a description, quantity, unit price of the Goods and sum total;

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	(2) Shipping order, delivery note or truck receipt; (3) Inspection certificate issued by the authorized inspection service, The above documents that is, item 1, and 3,shall be received by the Purchaser no later than 48 hours after delivery, if not received, the Purchaser will not be responsible for any late payments expenses. Item 2 shall be delivered with the Goods.
6.1	**Payment** The method and conditions of payment to be made to the Supplier under this Contract shall be as follows: **Advance Payment:** Thirty (30) percent of the Contract Price shall be paid within ten (10) working days of signing of the Contract against a simple receipt and a bank guarantee for the equivalent amount and in the form provided in the bidding documents or another form acceptable to the Purchaser. **On Delivery and Acceptance:** Seventy (70) percent of the Contract Price shall be paid on receipt and acceptance of the Goods and upon submission of the documents. The payment-delay period after which the Purchaser shall pay monthly interest to the supplier shall be 60 days
6.2	The interest rate that shall be applied is 0.2%
9.2	**Liquidated Damages** The liquidated damage shall apply and they shall be equivalent to one percent (1%) of the delivered price of the delayed Goods or unperformed services per week of delay or part thereof until actual delivery or performance The maximum amount of liquidated damages shall be: Ten percent (10 %) of the delayed Goods or services contract price.
11.2	**Settlement of Disputes** The rules of procedure for arbitration proceedings pursuant to GCC Sub-Clause 11.2 shall be

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	as follows: In the case of a dispute between the Purchaser and a Supplier who is a national of the Purchaser's country, the dispute shall be referred to adjudication or arbitration in accordance with the laws of Guyana **(c) The Courts of Georgetown Guyana, shall have exclusive jurisdiction in all the matters arising in the contract including execution of Arbitration Awards**
12.1	**The governing law shall be the law of*:* Guyana**

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Price and Delivery Schedule

See Appendix 1

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TECHNICAL SPECIFICATIONS

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SPECIFICATIONS

FOR THE

PROCUREMENT
OF
REINFORCED CONCRETE PRESTRESSED & PRECAST POLES
FOR DISTRIBUTION & TRANSMISSION STRUCTURES

Prepared by:
Erwin Chapman
Project Engineer – Civil
Project Management Department
257-259 Middle Street
Georgetown, Guyana.
Tel. #: 592-227-4482

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SPECIFICATIONS FOR
REINFORCED CONCRETE DISTRIBUTION POLES

1. GENERAL

This Specification covers the manufacture, testing and delivery to the site of Reinforced Concrete Poles, for Low Voltage & Medium Voltage distribution lines.

2. DESIGN LOADINGS

Each pole shall be able to withstand 2.5 times the design working load in the transverse direction (right angle).

Each Pole shall be able to withstand an independent load in the longitudinal direction of at least 25% of the transverse loading described above.

The ultimate design load used for designing each type of pole shall be that calculated by applying a point load of 2.5 (factor of safety, FS) times the appropriate standard design working load when the pole is held in the test frame specified.

3. STANDARDS AND CODES OF PRACTICE

Unless otherwise specified, the materials and workmanship specified shall conform to the latest version of the appropriate British Standards. In particular to:

BS 8110	1985		Structural use of Concrete
BS 12	1991		Specification for ordinary Portland Cement
BS 4449	1988		Specification for carbon steel bars for reinforced concrete
BS 4482	1985		Cold reduced steel wire for reinforced concrete
BS 882	1992		Specification for aggregates from natural sources for concrete
BS 1881	1993	Part	
		101	Sampling of fresh concrete
		102	Determination of slump
		108	Making Test cubes from fresh concrete
		110	Making Test cylinders from fresh concrete
		111	Method of normal curing of test specimens
		116	Method of determination of compressive strength of test cubes
BS 812	1984	101	Testing aggregates
BS 5328	1991	1	Guide to specifying concrete
	1991	2	Methods for specifying concrete mixes
	1990	4	Specification for procedures to be used in testing, sampling
			and assessing compliance of concrete

4. STANDARDIZED TYPES/SIZES OF REINFORCED CONCRETE POLES

HEIGHT OF POLE	BURIED LENGTH	WORKING LOAD (Kg)	PURPOSE

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(m)	(m)		
9	1.5		LV Lines with Public Lighting
12	1.8		HV and LV Lines with transformer (s), etc
13.5	2.0		HV and LV Lines with transformer (s), etc
15	2.1		Transmission Lines, HV and LV Lines with transformer (s), etc
17	2.3		Transmission Lines - Preferably Prestressed Poles
18.5	2.4		

5. MATERIALS

5.1 General

All materials shall conform to the relevant standard specifications referred to in this specification. However, the Inspection Officer representing the Guyana Power & Light Inc. (GPL) (herein after called the "Engineer") reserves the right, where necessary, to inspect/test samples of raw materials stockpiled for use, in any of the contractors work sites. Cost of such tests will be borne by the Contractor. In the event of such samples not confirming to the standards given herein, the Engineer may inform such to the Contractor in writing on the receipt of which, the contractor shall make immediate arrangements to remove such unsuitable materials completely from the work site, and replace them with materials conforming to the standards, at the contractors own expense.

Manufacturer's test certificates for all reinforcing steel shall be supplied to the Engineer in accordance with the said standards in Clause 3. These test certificates shall show compliance with the relevant standard specifications in all respects and shall be issued by an independent testing laboratory acceptable to the Engineer. If the manufacturer's test certificates are not available and if the Engineer requires it then it shall be the Contractor's responsibility for arranging all testing requested by the Engineer, before using such materials.

The test information so obtained must be sufficient to satisfy the Engineer that the item being tested conforms to the relevant standard specification. The Contractor shall bear the cost of these testing works.

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5.2 Reinforcing steel

Steel reinforcement shall be one of the following:

a) Hot rolled mild steel round bars complying with BS 4449.

b) High tensile steel either (i) cold worked deformed bars or (ii) hot rolled bars

The contractor shall supply the Engineer with a certificate for each consignment from the steel manufacturers showing that the steel meets the requirements of the specification. If required, the Engineer may carry out one tension test and one bond test

for each lot of 50 tonnes or part thereof.
Steel reinforcing bars shall be kept clean and shall be free from pitting, loose rust, mill scale, oil, grease, mortar, earth, paint or any harmful material.

5.3 Cement

Cement shall be Ordinary Portland Cement complying with BS 12.
Insoluble matter in the cement used shall be less than 3 percent, and magnesium compounds shall be less than 5 percent.

All cement necessarily complying with BS 12 shall be obtained from the manufacturer or from his authorized distributors acceptable to the Engineer.

Test Certificates for cement satisfying the relevant standards shall be provided by the contractor when requested by the Engineer where necessary before use is made of a particular brand of cement.

5.4 Aggregates

Both the fine and coarse aggregates shall comply with BS 882 - 1992. Fine aggregate (sand) shall consist of clean sands and coarse aggregate shall consist of clean crushed stone. The nominal maximum size of the coarse aggregates shall be 20 mm.

Aggregates shall be free from clay, earth, loom or other organic or similar material. Aggregate which in the opinion of the Engineer is not clean, shall be thoroughly washed in clean water before use.
Prohibited Aggregates:
- coming from feldspathic or schistous rock

- containing charcoal or their residues such as coke, ashes, clinkers etc.

Sulphate and Sulphide must be in such quantities that the whole proportion, in Sulphur Trioxide, be less than one percent (1%) of the mass.

5.5 Water

All water used for the mixing of concrete shall be clean and free of any dissolved or undissolved impurities likely to be harmful to the cement, aggregates or the steel reinforcement.

The use of sea water is prohibited.

The water shall contain less than 700 parts per million (ppm) of dissolved solids.

The water should comply with the requirements of BS 3148.

5.6 Admixtures

No admixtures shall be added to the concrete mix unless the prior approval of the Engineer has been obtained in writing.

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All admixtures shall comply with BS 5075. Approval by the Engineer of the use of any admixtures shall in no way relieve the Contractor and his supplier of their responsibility in regard to maintaining the quality or durability of the concrete used in the manufacture of poles.

Under no circumstances shall calcium chloride or any admixtures containing calcium chloride be permitted in the concrete used to manufacture the poles.

6. STORAGE AND PROTECTION OF MATERIALS

6.1 Cement

Cement shall be stored in a suitable weather-tight enclosure on a broad platform raised off the ground. The enclosure should be such that free circulation of air around the bags of cement is kept to a minimum.

Any cement that has become damp, caked or lumpy shall not be used. Concrete batching operations shall be organized so that cement that has been longest at the place of manufacture of the poles is used first.
If the Engineer has any doubts with regard to the quality of a certain batch of cement at site, samples of that should be retested for fineness, setting time, strength and soundness in the presence of the Engineer and in the event it fails the tests such cement should be removed from site immediately.

6.2 Aggregates

Both fine and coarse aggregates shall be separately stored so that they are kept clean and free from contamination and are not subjected to intermingling. Where a clean hard surface is not available for the stockpiles the bottom 150 mm of the aggregate piles which are in contact with the ground shall not be used.

Heaps of fine aggregate shall be capable of draining freely. Wet fine aggregate shall not be used until, in the opinion of the Engineer, has drained sufficiently to ensure proper control of the water/cement ratio.

6.3 Reinforcing steel

All reinforcing steel shall be stored clear off the ground on sufficient supports to prevent distortion of bars and in a clean dry place. Grease, oil, paint or any other substance that will affect the bond of the reinforcement shall not be allowed to come in contact with it. If it does then all such substances shall be cleaned off the reinforcement before it is placed in the pole moulds.
Mild steel and high tensile steel shall be stored separately

7. INSTALLATION OF REINFORCING STEEL

7.1 Cover

The **minimum cover** from the outermost reinforcing steel to the nearest permanent surface of the concrete member shall be 25mm. All steel shall be accurately placed and shall be held in position during manufacture.

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7.2 Spacing

The clear spacing between two parallel reinforcing bars shall not be less than the

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greatest of the nominal bar diameter or 1.33 times the maximum nominal size of the aggregate or 25 mm.

7.3 Stirrups and Ties

Bends in stirrups and ties shall have a diameter on the inside of the bar not less than the diameter of enclosed bar or two times the diameter of the stirrup or tie, whichever is the greater.

7.4 Welding

Any form of welding or tack-welding of reinforcement will not be permitted.

8. MIXING, PLACING AND CURING CONCRETE

8.1 Mix Design

Concrete used for casting of poles throughout this contract should possess the following minimum qualities (as per BS 5328).

i) Minimum Cement content - 440kg/m^3

ii) Maximum free water-cement ratio - 0.65

iii) Minimum strength at an age of 28 days – 41.4N/mm

iv) Nominal maximum aggregate size - 20 mm

It is the full responsibility of the contractor to ensure that the design strength of the concrete and the concrete mix is not varied unless by agreement with the Engineer.

8.2 Concrete mixing

All concrete except where specifically permitted by the Engineer in writing shall be mixed in mixing machines.

The dry concrete ingredients shall be mixed until a uniform colour is obtained. After the addition of the water the concrete shall be mixed for a further 2 minutes or until a uniform colour is achieved. The total water in the mix shall not exceed the amount specified in the Clause 8.1 above.

In computing the quantity of water to be added, due account must be taken of the water contained in the aggregates. The amount of water shall be sufficient to ensure thorough hydration, good workability and high strength.

8.3 Workability

The concrete shall be of such consistency that it can be readily worked into the corners and angles of the formwork and around reinforcement without segregation of the materials or bleeding of free water at the surface. On striking the formwork it shall present a face which is smooth & uniform, free from honeycombing, or excessive dusting. Water should be added with great care, without letting the total water content to be excessive.

8.4 Transportation

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The concrete shall be discharged from the mixer and transported to the Works by means that shall be approved by the Engineer and which shall prevent adulteration, segregation or loss of ingredients, and ensure that the concrete is of the required workability at the point and time of placing.

8.5 Placing and compaction

Placement of concrete shall be at such a rate that the concrete is at all times plastic and flows readily into the space between the reinforcement. No concrete that has partially hardened or been contaminated by foreign materials shall be deposited in the moulds, nor shall re-tempered concrete or concrete that has been re-used after initial set be used.

The placement of concrete in the moulds shall be completed within half hour after the introduction of mixing water to the cement and aggregate in the concrete mixer. Each mould shall be filled with concrete as a continuous operation. Construction joints will not be permitted in the poles. Should there be an interruption during the placement of concrete into the mould such that initial set occurs to the deposited concrete then that pole shall be discarded.

All concrete shall be consolidated in the moulds using **high frequency vibrators**. The vibration applied shall be uniform along the length of the mould and shall be carefully controlled so that adequate consolidation is achieved without segregation of the mixed ingredients by over vibration.

8.6 Protection and curing of concrete

During the initial stages of hardening, the concrete shall be protected from direct rays of the sun and from drying winds. The moulds containing the hardened concrete shall not be disturbed or shifted unless it can be shown that such movements will not impart any damaging stress to the hardening concrete.

9. CONCRETE SAMPLING AND TESTING

9.1.1 General

A random sampling procedure, to obtain the samples for compression strength tests of concrete has to be adopted, and the maximum frequency of sampling of the concrete shall be (….) one sample per (…) …… poles, but not less than one sample per day, whichever gives the higher number of samples. Contractor shall make arrangements to carry out the compression strength test as per BS 1881, for each of above samples, at an independent testing laboratory approved by the Engineer, and the results of these tests shall be brought to the notice of the Engineer within 10 working days from each test. The acceptance of concrete will be decided by the Engineer, as described in Clause 9.3.

9.1.2 Casting of Samples

Samples for compression strength tests shall be moulded in 150mm cubes. The date of casting of the sample shall be clearly and indelibly marked on the fresh concrete. Subsequent marking on freshly applied grout layer is not allowed.

A sample shall consist of 4 cubes made concurrently from the same batch of concrete. Two (2) of the cubes shall be used to establish the 28 day compression strength and two (2) of the cubes shall be used to establish the 07 day compression.

All samples shall be moulded and cured in accordance with the procedures in BS 1881.

9.2 Compression Strength Tests

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Testing of the compression strength samples shall be carried out in accordance with the procedures in BS 1881.
The minimum required 28 day compression strength of all concrete used to manufacture concrete poles shall be 41.4 N/mm or 6,000 PSI.

9.3 Acceptance Criteria for Compression strength

The concrete shall be considered acceptable when tested and found satisfactory according to stipulations in B.S. 5328 Part 4.

9.4 Pole Moulds and Surface Finishes

Moulds shall be designed, constructed and finished to ensure they can be removed without damaging the hardened concrete, and they shall be securely braced and supported to prevent sagging and bulging during the deposition of the concrete. Joints in the materials used to manufacture the moulds shall be tight and shall not permit any leakage of cement paste from the concrete mix. Holes in the walls of the moulds used for retaining pins which form bolt holes in the finished pole shall be provided with flexible seals or some similar means to prevent the loss of any cement paste from the concrete mix.
All poles shall have a surface finish that is smooth, hard, uniform in colour and appearance and free from any honeycombing and air pockets exceeding 4mm in diameter. All fins and other projections shall be rubbed down or ground flush with the general surface of the pole.
Repair of defective concrete will **not be permitted** and any pole containing defective concrete will be **rejected** by the Engineer.

9.5 Dimensional Tolerances

The permitted variation from a stated dimension or cross sectional shape of the finished pole shall be as follows. Any pole having dimensional tolerances above the figures given below will be rejected by the Engineer.

Length	15 mm
Cross Section	Overall dimensions and dimensions of parts such
	as webs etc. +4 mm, -2 mm
Straightness	Deviation from a straight line joining the top end
	And the widest dimension at the Butt end 15 mm
Holes	Size 0, +2 mm relative position 5 mm
Location of Reinforcement	3 mm but specified covers shall not be reduced

9.6 Marking of Poles

Following data of the pole shall be clearly and indelibly marked at a position approximately 1.5m above the ground level, by **embossing** the marks on **fresh** concrete, just after the casting of pole. Subsequent marking on cement mortar/grout applied **later** into the pole is **not** allowed.

a) Letters "GPL", size and working load, date of casting, serial no. and name/identification no. of manufacturer, of the pole. No two poles belonging to the same manufacturer could bear the same serial number. (A pre-formed template shall be used for this purpose).

b) A line indicating the theoretical point of fixity as given in the corresponding drawings (for purpose of testing).

9.7 Lifting, Handling and Shifting

Poles shall not be lifted or handled until the concrete has attained sufficient strength.

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While lifting, the pole shall be held from at least two points.

10. INSPECTION AND TESTING OF POLES

10.1 General

The GPL shall reserve the right to inspect the Plant and Machinery and raw materials used for the manufacture of poles, manufacturing facilities, methods and systems, testing equipment and the final inspection of manufactured poles. The contractor shall provide access to the Plant at any reasonable time to the Engineer and shall provide such facilities as necessary, free of charge, for carrying out tests and inspection and provide labour, gauges, tools, materials and testing equipment/apparatus for such tests and inspection.

In case of manufactured Poles the Engineer shall have the right to reject any pole/poles with the surface finish/dimensions/markings not in accordance with Clauses 9.4, 9.5 and 9.6 respectively.

10.2 Testing of Poles

A pole shall be tested in the horizontal position. It shall be held rigidly at the butt end in accordance with the supported lengths on 1/9th of the total length of each pole.

In horizontal testing, provision shall be made with suitable supports to neutralise the bending moment.

Test load shall be applied at a point 0.60m from the top of the pole and raised in increments of 10% of the ultimate load. Measurements shall be taken for deflection after each increment of 10% of the ultimate load.

Load shall be reduced to zero at 40% and at 60% of ultimate load and permanent set shall be measured. Load shall be increased in steps of 10% of the ultimate load until failure occurs by maintaining each load above 60% of the ultimate load for at least two minutes (failure load is the load at which the dynamometer indicates no further increase in load).

After the failure has occurred, the Pole shall be removed from the test bed, and concrete shall be broken sufficiently from any place/places as required by the Engineer, until the reinforcements and stirrups are exposed. The reinforcement should be carefully examined and verified whether the following factors are meeting the requirements of relevant drawing/specification.

i. Type, diameter, length number of bars and positioning of the main reinforcement.

ii. Type, diameter, shape and spacing of stirrups.

iii. Length and correct positioning (staggered) of lap joints.

10.3 Failure to Satisfy Acceptance Criteria

In the event that a pole does not satisfy any one of the above acceptance criteria, one more pole selected randomly from the same batch shall be tested for all the acceptance criteria. If this additional pole tested fails to satisfy any one of acceptance criteria then the entire batch shall be rejected. All the poles rejected shall be marked with a permanent ink, and removed from the site immediately.

10.4 The cost of all the above pole testing shall be borne by the Contractor. This includes the cost of poles used for testing.

11. TRANSPORTATION & HANDLING

11.1 Transport to Site

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Pole shall be stored, transported, and handled at all times with its longer axis in vertical position to ensure that the resulting forces are always resisted by the poles stronger direction.

The pole shall be transported on a suitable vehicle supported full length or with limited overhang.

11.2 Lifting and Storage

While lifting, the pole shall be held from at least two points and when stacked at the manufacturing plant or at the point of delivery the poles shall be separated by timber bearers placed between each unit. Timber bearers shall be placed only on lines vertically above each other.

Transporting of poles is deemed to be completed only when the contractor hands over the poles to places nominated in the schedule of this contract.

If any damage or cracking occurs to any of the poles before they are handed over to the Engineer such poles shall be rejected. All rejected poles shall be marked with a permanent ink and removed from the site immediately.

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SPECIFICATIONS FOR REINFORCED CONCRETE TRANSMISSION POLES

1. GENERAL

1.1 INSTRUCTIONS

This guide specification provides a basis for procuring direct embedded standard class spun prestressed concrete poles. If poles are competitively bid, use of this specification will eliminate ambiguities which might arise in the evaluation process.

1.2 SCOPE

This specification covers the technical aspects of design, materials, manufacturing, inspection, testing, and delivery of direct embedded standard class spun pre-stressed concrete poles. It is recommended that this specification be limited to poles which are not guyed, not subjected to unbalanced lateral loads, or do not have deflection limitations or other special limitations.

1.3 INITIAL DESIGN CONSIDERATIONS

There are several engineering decisions required of the user of this specification to determine which standard class concrete poles to specify. Some examples include, but are not limited to:

Amount of foundation rotation and deflection to consider for incorporating P-delta moments;

Location of point of fixity;

* Embedment depths;

* Load cases to be considered in addition to those required by the National Electrical Safety Code (NESC); and

* Deflection limitations.

2. DEFINITIONS

* Admixture - Any material other than water, aggregate, or cement that is used as an ingredient of concrete and added to concrete before or during its mixing to modify its properties.

* Appurtenance - Any hardware or structural members that are attached to the concrete pole to make a complete structure.

* Bonding, Electrical - The electrical interconnecting of conductive parts, designed to maintain a common electrical potential.

* Cant Hole - A through hole in the pole which is used in rotating the pole about its axis during setting. The hole is typically 1-1/2" in diameter and located approximately 4 feet above the ground line.

* Circumferential Cracks - Cracks that parallel a cross-section of a concrete pole.

* Cracking Moment - The moment which is developed in the pole at the time the cracking strength of the pole is experienced.

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* Cracking Strength - The point at which the concrete just begins to separate due to exceeding the tensile strength of the concrete on the tension face of the pole.

* Deleterious Substance - Any substance that is not desirable in a mixture, usually causing harm in sufficient quantities.

* Dropout, Steel Cable - The terminating point of any longitudinal steel that is not continuous for the length of the pole.

* Efflorescence - The formation of a white film on the surface of the pole, typically caused by the emergence of chlorides during curing.

* Embedment - That portion of the pole which is designed to be located in the ground or other supporting medium.

* Ground line - The point at which the embedment begins. Resistance from the supporting soils or other medium begins at or below ground line. Ground line is defined for transmission line design to determining ground clearances and for locating climbing devices, cant holes, nameplates, etc.

* Group of Bolt Holes - All of the holes in which a single hardware assembly will be attached.

* Guyed Structure - A structure in which cable supports are used to increase its lateral load resistance.

* In-Line Face - The face of the pole which “faces” an adjacent structure in the line.

* Longitudinal Cracks - Cracks in concrete that are parallel to the long axis of the pole.

* Longitudinal Reinforcement - The reinforcing steel which is installed along the long axis of the pole.

* Manufacturer - The company responsible for the fabrication of the poles. The manufacturer makes the poles based on the design drawings developed by the structural designer, which is the engineer responsible for the structural design of the poles and is usually employed by the manufacturer.

* Overload Factor - A multiplier which is applied to each of the vertical, transverse and longitudinal structure loadings to obtain an ultimate load. The multiplier takes into account the variability of climatic events as well as the importance of the structure.

* Owner - The Rural Utilities Service borrower procuring the concrete poles.

* P-Delta Moment - The additional moment created by vertical loads acting on

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the structure which deflects from its unloaded position.

* Point of Fixity - The point on the pole at or below ground line where the maximum moment occurs. Location of this point is dependent on the characteristics of soils around the embedded portion of the pole

* Pole End Squareness - A measure of how perpendicular the finished surface of the pole butt is to the longitudinal axis of the pole.

* Pole Failure - The point at which the maximum strength of the pole is realized. Failure usually occurs with crushing of the concrete or permanent deformation.

* Pole Sweep -The measure of deviation from straightness along the length of the pole.

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* Post-Tensioned Steel Strand - The longitudinal reinforcement that has been tensioned after the concrete has hardened.

* Pre-stressed Concrete - Reinforced concrete in which internal stresses have been introduced to reduce potential tensile stress in concrete resulting from loads.

* Pretensioned Steel Strand - The longitudinal reinforcement that has been tensioned before concrete is placed. Also referred to as prestressed, steel strand.

* Pyrite Staining - A pale brass-yellow colored stain in the concrete caused from the concrete mixture containing an excess amount of iron disulfides.

* Reinforcing Steel - Any steel for the purpose of reinforcement of the concrete, including longitudinal reinforcement, spiral reinforcement and deformed reinforcing bars.

* Release Strength - The minimum concrete strength that is necessary before the pretensioned strands can be released.

* Spiral Reinforcement - Steel reinforcement, continuously wound in the form of a cylindrical helix that encloses the longitudinal steel.

* Spun Concrete Pole - A pole which is manufactured by placing prestressed steel strands and spiral reinforcement in a mold, adding fresh concrete and spinning the mold to form the pole.

* Standard Class Pole - A direct embedded spun concrete pole which is designed according to a standardized strength and loading criteria established by the Owner.

* Tip Load - The horizontal load which is applied to the standard class pole at a distance of 2 feet from the pole tip.

* Ultimate Load - The maximum design load which includes the appropriate overload factor.

* Ultimate Moment Capacity - The moment which is developed in the pole at the time the ultimate strength of the structure is realized.

* Ultimate Strength - The maximum strength in the stress-strain diagram. For the pole, this is considered to be the point at which the pole fails, usually with crushing of the concrete.

* Yield Strength - The minimum stress at which a material will start to physically deform without further increase in load or which produces a permanent strain. This is known as the elastic limit of the material.

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* Zero Tension Strength - The moment at which a crack that was previously created by exceeding the cracking moment strength will open again. Under this condition, an applied moment will not cause any tensile stress in the concrete. It will always be less than the cracking moment strength.

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3.CODES AND STANDARDS

Codes, standards, or other documents referred to in this specification are to be considered as part of this specification. In the event of a conflict between this specification and the National Electrical Safety Code (NESC), the NESC shall be followed. In the event of a conflict between this specification and all other referenced documents, this specification shall be followed. If a conflict between several referenced documents occurs, the more stringent requirement shall be followed. If clarification is necessary, contact the owner.

The most recent editions of the following codes and standards shall be followed in the design, manufacture, inspection, testing, and shipment of spun, pre-stressed concrete poles.

3.1 American Concrete Institute (ACI):

ACI 318, Building Code Requirements for Reinforced Concrete

3.2 Pre-stressed Concrete Institute (PCI):

MNL 116, Manual for Quality Control for Plants and Production of Precast Pre-stressed Concrete Products

3.3 American Welding Society (AWS):

AWS D1.1, Recommended Procedures for Welding, Reinforcing

Steel, Metal Inserts, and Connections in Reinforced Concrete Construction

3.4 American Society for Testing and Materials (ASTM):

ASTM A82 Steel Wire Plain, For Concrete Reinforcement

ASTM A416 Steel Strand, Uncoated 7-wire For Prestressed Concrete

ASTM A421 Uncoated Stressed Relieved Steel for Prestressed Concrete

ASTM A496 Steel Wire, Deformed For Concrete Reinforcement

ASTMA615/A615M Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

ASTM A617/A617M Axle-Steel Deformed and Plain Bars for Concrete Reinforcement

ASTM A641M Zinc Coated (Galvanized) Carbon Steel Wire-Metric

ASTM A706A/A706M Low Alloy Steel Deformed Bars for Concrete Reinforcement

ASTM C31 and 39 Specifications for Sampling Concrete and Testing

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Concrete Cylinders

ASTM C33 Concrete Aggregates

ASTM C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM C150 Portland Cement

ASTM C172 Sampling Freshly Mixed Concrete

ASTM C289 Testing Potential Alkali-Silica Reactivity of Aggregates

ASTM C494 Chemical Admixtures for Concrete

ASTM C881 Epoxy-Resin-Base Bonding Systems for Concrete

ASTM C1089 Standard Specification for Spun Cast Prestressed Concrete Poles

3.5 Industrial Fasteners Institute (IFI): Fastener Standards

3.6 American National Standards Institute (ANSI) C2, National Electrical Safety Code

3.7 American Society of Civil Engineers/Prestressed Concrete Institute (ASCE/PCI) Joint Committee on Concrete Poles:

Guide for the Design of Prestressed Concrete Poles, latest edition

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4. GENERAL REQUIREMENTS

The design, fabrication, processes, tolerances, and inspection of poles shall conform to the following:

4.1 Design Requirements:

4.1.1 Pole designs shall be prepared from the attached configuration drawings, design loads and strength requirements for the standard class poles. Poles shall be designed by the ultimate strength method as explained in ACI 318. The point-of- fixity shall be considered to be located at a distance from the pole butt which is equal to 7% of the pole length. The pole shall be symmetrically designed such that the strength required in any one direction shall be required in all directions about the longitudinal axis. The poles shall be uniform taper from tip to butt.

4.1.2 Using the corresponding values in Table 1, the poles shall be designed for the following requirements as illustrated by Figure 1:

a. The reinforcing steel shall begin at the pole tip and the pole shall develop the minimum ultimate moment capacity required in Table 1 at a distance of five feet from the pole tip;

b. The pole shall develop the minimum ultimate moment capacity along the pole to the point-of-fixity which is calculated by multiplying the tip load in Table 1 by the distance from the tip load;

c. The reinforcing steel required at the point-of-fixity shall continue to the pole butt.

4.1.3 The poles shall be designed to withstand the specified tip loading without exceeding a pole deflection of 15 percent of the pole height above the point of fixity when tested under short term loading conditions in accordance with the horizontal test procedures described in the Guide for the Design of Prestressed Concrete Poles (ACSE/PCI Joint Committee on Concrete Poles).

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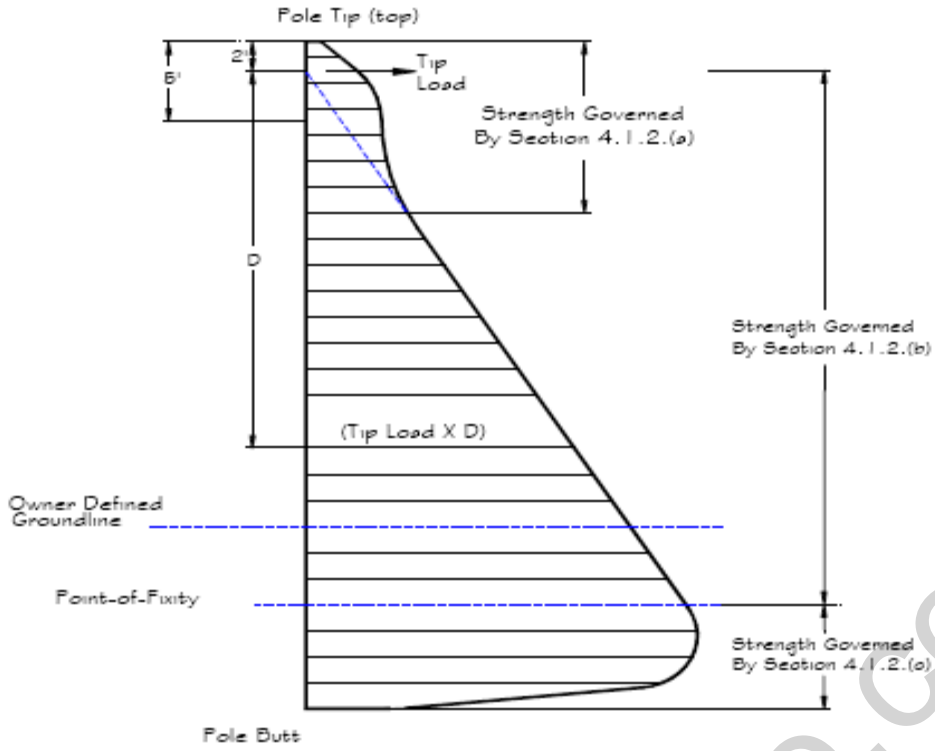

FIGURE 1

Minimum Ultimate Moment Capacity Diagram along the Pole

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4.1.4 The poles shall be designed to withstand 40 percent of the specified tip loading without exceeding a pole deflection of 5 percent of the pole height above the point of fixity when tested under long term loading conditions in accordance with the horizontal test procedures described in the Guide for the Design of Prestressed Concrete Poles (ACSE/PCI Joint Committee on Concrete Poles).

4.1.5 Poles shall be designed so that the cracking strength of the pole exceeds 40 percent of the required ultimate strength.

4.1.6 Poles shall be designed so that the zero tension strength of the pole exceeds 28 percent of the required ultimate strength.

TABLE 1

Strength Requirements

Standard Class Designations For Spun Concrete Poles	Minimum Ultimate Moment Capacity At Five Feet From Pole Tip(Ft.-Kip)	Tip Load (Lbs.)
C-12.0	96	12,000
C-11.0	88	11,000
C-10.0	80	10,000
C-09.0	72	9,000
C-08.0	64	8,000
C-07.1	57	7,125
C-06.2	50	6,250
C-05.4	44	5,450
C-04.7	38	4,700
C-04.0	32	4,000
C-03.4	27	3,375
C-02.8	23	2,825
C-02.3	19	2,325
C-01.9	15	1,875

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4.1.7 Poles shall be designed to withstand a one-point (tilting) pickup during erection. The poles shall be designed for two-point pickup for horizontal handling. Poles shall be designed for the loads generated from handling and erecting without exceeding the cracking moment capacity of the poles.

4.1.8 The pole design shall include allowances for loads from handling,

transportation and erection without failure, permanent deformation, or damage to the pole when handled according to the manufacturer's instructions.

4.1.9 The design of each pole shall be performed using the applicable codes and standards listed in Section 3 of this specification.

4.1.10 Pole design and design calculations shall be the responsibility of the manufacturer.

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4.2 Materials:

4.2.1 The chemical properties of materials used in the manufacture of the poles shall meet the requirements of the applicable ASTM specification and be such that noticeable pyrite staining or efflorescence due to sulfates and/or chlorides does not occur.

4.2.2 All anchors and inserts provided by the manufacturer shall be hot dip galvanized or non-corrosive material. Cadmium-plated and aluminum material shall not be used. All inserts shall be non-corrosive materials designed and manufactured for the intended purpose and used according to manufacturer's recommendations. If the manufacturer considers lifting devices necessary or desirable, suitable flush inserts may be cast into the pole with removable lifting attachments.

4.2.3 The concrete shall have a minimum 28-day compressive strength of 5,000 psi with a maximum water-cement ratio of 0.40. Higher strengths and lower water-cement ratios are encouraged and may be necessary to offset steel cover requirements.

4.2.4 The cement shall be Type I, II, III, or V Portland cement conforming to ASTM C150.

4.2.5 Fine aggregate shall be natural sand, consisting of clean, strong, hard, durable uncoated particles conforming to ASTM C33, and all specifications included therein. The aggregate shall be well graded from No. 4 to No. 200 sieve. Deleterious substances shall not comprise more than 5 percent of the sample.

4.2.6 Coarse aggregate shall be clean, tough, crushed stone conforming to ASTM C33, and all specifications included therein. The aggregate shall be well graded from a 3/4 inch to a No. 8 sieve with no more than 5 percent of the sample passing through a No. 8 sieve. Deleterious substance content shall not exceed 5 percent of the sample. Resistance to abrasion shall not exceed 40 percent as tested in conformance with ASTM C131. Absorption shall be less than 4 percent or aggregate shall be saturated with water prior to use in concrete.

4.2.7 Aggregate shall be tested in accordance with ASTM C289 to determine an alkali-aggregate reaction. Crushed rock or partially crushed rock shall be the source of the aggregate.

4.2.8 Water shall be clean, free from undesirable amounts of oils, acids, alkalis,

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salts, organic materials, or other deleterious substances.

4.2.9 Admixtures shall conform to ASTM C494. Air entraining admixtures can be used if approved by the owner. Admixtures shall not contain chloride ions in quantities that would cause the total chloride content of the concrete to exceed 0.4 pound per cubic yard.

4.2.10 Prestressing steel mechanical properties, reinforcing steel and spiral reinforcement shall be in accordance with the applicable ASTM specifications listed in Section 3 of this specification.

4.2.11 Concrete mix design requirements listed above can be altered with the owner's approval.

4.3 Workmanship:

4.3.1 The pole shall be circular in cross section and the diameter, as measured at any location on the pole, shall not vary by more than 1/4 inch from any other measurement taken on that cross section.

4.3.2 The pole shall have a uniform taper from top to butt.

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4.3.3 Deviation of the pole from straightness is allowed in one plane and one direction only. A straight line joining the edge of the pole at the butt and the edge of the pole at the top shall not be further from the surface of the pole at any point by more than the accumulated value of 0.25 inches for each 10 feet of length between the two ends. The detensioning operation shall be performed in a manner to keep the prestressing forces symmetrical.

4.3.4 Prestressing steel stress limits shall not exceed:

1. 80 percent of the ultimate strength or 94 percent of the yield strength or the maximum value recommended by the manufacturer of pre-stressing steels or anchorages for jacking force;

2. 74 percent of the ultimate strength or 82 percent of the yield strength immediately after pre-stress transfer; and

3. 70 percent of the ultimate strength for post-tensioned steel at anchorages and couplers immediately after anchorage.

4.3.5 Spiral reinforcement shall cover the entire pole length. The minimum clear spacing of spiral reinforcement in the top 2 feet and bottom 2 feet of the pole shall be 4/3 of the maximum coarse aggregate or three times the strand diameter, whichever is larger, but not less than one inch. The maximum clear spacing for the remainder of the pole shall not exceed 4 inches.

4.3.6 Clear distance between pre-stressing steel strands shall be either 4/3 times the maximum aggregate size or 3 times the strand diameter, whichever is larger. In the event that this condition is not met at the pole tip, closer spacing would be permitted provided that the placement of concrete can be accomplished satisfactorily, adequate stress transfer can take place, and appropriate provisions are used for maintaining spacing between the pre-stressing steel strands.

4.3.7 The manufacturer shall provide holes through each pole as specified on the pole framing drawing(s), included as Attachment A. Preformed holes shall be cast using rigid PVC inserts (or other suitable material) held firmly in place. Plugs may be used with the owner's approval. Preformed inserts shall be sized for the specified hole diameter and shall be full length of pole diameter for all through holes. Unless otherwise noted on the drawings, holes shall be perpendicular to and pass through the centerline of the pole.

4.3.8 The pole manufacturer shall provide preformed inserts at two locations to

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allow air circulation within the pole. Inserts shall be 1 inch minimum diameter and shall have a louvered opening. The inserts shall be located within 10 feet of the tip and within 10 feet above the ground line.

4.3.9 Holes may not be drilled through the pole wall, except as specifically necessary to correct errors or omissions and only if approved by the owner.

4.3.10 The longitudinal steel shall not be cut for any reason unless approved by the owner. The owner may reject any pole in which the longitudinal steel is cut. All exposed steel resulting from drilled holes shall be covered with an epoxy paste per ASTM C881 Type III. Areas with moderate or severe spalling shall be cleaned and reformed with an epoxy paste or epoxy concrete per ASTM C881 Type II.

4.3.11 The owner shall have the right to reject any pole in which the performance of a bolted connection may be reduced due to the lack of a cleanly preformed or drilled hole.

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4.4 Manufacturing Tolerances:

Manufacturing tolerances shall be limited to the following:

Pole Length	±2 inches, or ±1 inch ±1/8 inch per 10 feet of length, whichever is greater (i.e. – 120 foot pole shall have a length of 120 feet ±2⅝ inches)
	-6 inches or +12 inches for assembled spliced structure
Pole Diameter	±1/4 inch
Wall Thickness	1/4 inch or 12 percent of wall thickness. (Note: this requirement may be waived provided that the structural adequacy and durability are not impaired.)
Pole End Squareness	±1/2 inch per foot of pole diameter
Pole Sweep	1/4 inch per 10 feet of pole length
Pole Weight	±10 percent of calculated value
Location of Longitudinal Reinforcement	+1/4 inch and ±1/8 inch reinforcement placement for the centroid of a group
Location of Spiral Reinforcement	±25 percent of clear spacing required with total reinforcement placement required quantity per 3 feet of pole length maintained.
Location of Group of Bolt Holes from Top of Pole	±2.0 inches
Location of Bolt Holes Within a Group of Bolt Holes	±1/8 inch
Location of Centerline Between Groups of Bolt Holes	±1.0 inch
Bolt Hole Diameter	±1/16 inch of specified diameter
Bolt Hole Alignment	Not to vary from the longitudinal pole centerline of that group of holes by more than 1/8 inch
Location of Identification Plate	±2.0 inch

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4.5 Grounding:

4.5.1 An external pole ground wire shall be used. Threaded inserts for attaching ground wire clips that hold the external ground wire shall be sized and positioned per the attached drawings.

4.5.2 Except for bonding of the steel tendons, there shall be no internal pole grounds. A minimum of one longitudinal steel strand shall be bonded electrically to a threaded bronze insert at the top and bottom of the pole. Each bond shall be located within the top 2 feet of the pole top and at 4 feet above ground line (See Attachment A). For spliced poles an additional bond shall be provided above and

below the splice to a threaded bronze insert within 24 inches of the splice. Steel splice sections shall have the appropriate number of grounding attachments. This bonding system shall be non-corrosive and shall be approved by the owner.

4.5.3 If required by the owner, manufacturer shall provide ground wire clamps for all ground wire attachments.

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4.6 Climbing Devices:

4.6.1 Clips for removable ladders shall begin not closer than 3 feet above ground for a direct embedded pole and extend to the top of the pole. Each ladder clip shall be designed to support a minimum 1,000 lb. shear working load. Ladder clips shall be located to avoid interference between ladders and other attachments.

4.6.2 Removable step bolts shall be provided with spacing as indicated beginning 8 feet above ground line and extending to the structure top. Each step lug and step bolt shall be capable of withstanding a minimum of a 500lb.
working load. Step bolt mounting nuts shall be spaced at 1 foot 6 inch intervals and oriented to provide maximum ease of climbing.

4.7 Inserts:

4.7.1 Inserts shall be made of materials which will not deteriorate in the environment in which they are placed. The insert shall be made of materials that will not react unfavorably with the concrete or fasteners. The insert shall not be made of materials that will corrode and stain the concrete.

4.7.2 Inserts shall not fail before the pole reaches ultimate strength, unless permitted by the owner.

4.8 Cover:

4.8.1 There shall be a minimum of 3/4 inch of clear concrete cover over all longitudinal reinforcement and all spiral reinforcement as a result of the concrete spinning process.

Poles not meeting this requirement shall be rejected except as allowed by Section 4.8.2.

4.8.2 There shall be a minimum specified wall thickness of 2.5 inches of spun concrete at all points along the pole.

4.8.2.1 An actual wall thickness of less than 2.5 inches of spun concrete may be allowed from the pole tip to 3 feet below the pole tip provided the cover requirements of Section 4.8.1 are met in the spinning process and provided the pole can meet all other requirements of the specifications.

4.8.2.2 The owner shall, as soon as possible, be notified of any poles with less than 3/4 inch of spun concrete inside cover within 3 feet of the pole tip. At the owner's sole discretion, the owner may reject the pole or may allow the pole to be repaired by

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swabbing the interior with an epoxy liner (per ASTM C881 - Type V, Class B or C) and plugging with 3,000 psi. concrete to the owner's satisfaction to a distance of 42 inches from the tip. No pole shall be plugged or considered for acceptance by the owner unless assurance is made by the manufacturer that the repaired pole can meet all requirements of this specification.

4.9 Splices:

4.9.1 Flange-bolted or slip-joint type of splices is permitted. When required, flange-bolted type splice shall be used at guyed structures.

4.9.2 The reinforcing steel and connection apparatus comprising the splice shall be properly anchored as part of the pole. The pole shall be designed to fail before the splice fails by yielding of the splice steel.

4.9.3 The axis of the pole shall not be distorted after the pole is mated. Shims shall not be used to straighten the pole unless approved by the owner. The owner reserves the right to reject a pole based on the improper mating of a pole splice.

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4.10 Appurtenances:

4.10.1 Appurtenance material shall be supplied by the owner. The owner shall also provide the manufacturer of the connectors and/or members with the locations, orientations, sizes, types, and strength capacities of the appurtenances.

4.10.2 The concrete pole manufacturer is responsible for the proper design coordination and fit up of all appurtenance connections and members to the pole(s). Manufacturer shall notify owner if any appurtenance material supplied by owner will not result in properly designed structure.

4.11 Finishing:

4.11.1 The surface of the pole shall have a smooth finish with no unsealed cracks. Cracks shall be sealed either by use of an epoxy injection system following the epoxy manufacturer's specifications, or by V-notching the crack on a 1:1 slope to a minimum depth of 1/4 inch, then filling the V-notch with an epoxy seal per ASTM C881 Type IV. Covering the crack with an epoxy coating is not allowed.

4.11.2 Small cavities caused by air bubbles, honeycomb spots, or other small voids, shall be cleaned thoroughly, saturated with water and then carefully pointed with a cement mortar. A small cavity is defined as one not larger than 1/2 inch in diameter or deeper than 1/4 inch.

4.11.3 If any cavities or voids absorb water which indicate the void extends into wall of the pole, then the pole shall be rejected.

4.11.4 The manufacturer shall seal both ends of the pole and protect the steel strands from corrosion using a suitable epoxy.

The system used shall be approved by the owner.

4.11.5 The center void at the top end of the pole shall be sealed with a minimum 6 inch thick 1000 psi strength concrete plug and the pole tip capped. The pole tip cap shall be a suitable epoxy-aggregate mortar securely bonded to the pole, or shall be a metal or polymer cap securely held in place with set screws. Sharp edges shall be tooled to form smooth, chamfered corners. The manufacturer shall assure that the capping method will prevent weather intrusion into the pole and prevent pole tip deterioration.

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4.11.6 The center void at the bottom end of the pole shall be sealed with a minimum 12 inch thick 1000 psi strength concrete plug. The plug shall be securely bonded to the pole and shall be tooled to form a smooth, uniform bearing surface. A PVC formed hole shall be provided in the center of the plug to allow for drainage.

4.11.7 Where application of epoxy-aggregate mortar is specified, the surface of the pole where the mortar is to be applied shall first be coated with the epoxy coating. This coating shall be allowed to cure to a tacky, but not hardened state, before the mortar is applied. After the mortar has been applied and allowed to cure for 24 hours, a top coat of epoxy coating, 5 mm thick, shall be applied over the mortar and the surrounding area of the pole.

4.12 Marking:

4.12.1 Each pole shall be identified with the manufacturer's identification plate. The following information shall be stamped into the plate with letters not less than 1/4 inch in height:

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* Manufacturer's name
* Day, month, and year of manufacture
* Structure number
* Length and class of pole
* Ultimate moment capacity at ground line
* Pole framing designation (per framing guide) or pole type
* Owner's name

4.12.2 The manufacturer's identification plate shall be fabricated from a non-corrosive, non-staining metal such as bronze, brass, Series 300 stainless steel, or an aluminum alloy that will not react unfavorably with concrete. The plate shall have suitable anchor or anchors welded to the back of the plate to permit bonding to the pole.

4.12.3 The identification information listed above may be cast into the surface of each pole. These marks shall be at least ¾ inch in height and 1/8 inch deep.

4.12.4 The identification plate or cast in-place markings shall be located on an in-line face of the pole in the direction of the transmission line. The bottom of the identification plate or last line of the cast in-place markings shall be located five feet above the defined ground line.

4.12.5 Each pole shall be marked with the information listed below. A permanent marker shall be used and the writing shall be small but legible. For spliced poles, each section shall be marked as below:

a. Support points;

b. Two-point pickup location for handling the pole in the horizontal position;

c. One-point pickup location for use in raising the pole to a vertical position and handling during the setting operation;

d. Pole length and class, fabrication number, structure number, and pole framing guide number on the butt of the pole; and

e. Cant hole locations, if required by owner.

5. INSPECTION AND TESTING

5.1 General:

5.1.1 Manufacturing and testing procedures shall be in compliance with applicable

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codes and standards listed in this specification.

5.1.2 Upon request, the manufacturer shall furnish the owner with certified test reports for the steel and concrete used.

5.2 Inspection:

5.2.1 The manufacturer shall make adequate tests and inspections to determine that each of the poles furnished is in strict accordance with this specification. At the request of the owner, the manufacturer shall submit a quality assurance report to the owner prior to the shipment of each pole and shall include the following minimum information:

* Fabrication number and owner's structure number;
* Minimum and maximum tip wall thicknesses and steel coverage (to inside and outside) measurements shall be made at 3 inches from the tip;
* Minimum and maximum butt wall thicknesses and steel
* Coverage (to inside and outside) measurements shall be made at 3 inches from butt;
* Condition of pole interior and evidence of exposed rings or reinforcement steel;
* Proper hole and insert locations and sizes;
* Evidence of cracking during or after two-point handling;
* Actual manufactured pole weight;
* Report of any repairs made to the pole;
* Date of manufacture and inspection(s); and
* Inspector's seal.

5.2.2 All material and workmanship shall be subject to inspection, examination, and test for conformance to the requirements of this specification by the owner. The inspection, examination, or testing could be done at any time during material procurement, manufacturing, storage periods, transit, or at the pole destination. Inspection, examinations, and tests may be waived by the owner, but in no case

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shall this be interpreted as releasing the manufacturer from the manufacturer's responsibilities for delivering poles that meet the requirements of this specification.

5.2.3 The owner shall have free entry, at all times, while work is being carried on, to all parts of the manufacturer's plant where manufacture of the owner's poles is being performed. The manufacturer shall afford the owner reasonable facilities, without charge, to satisfy the owner that the poles are being manufactured in strict accordance with this specification.

5.2.4 The manufacturer shall furnish certified test reports to the owner, upon request, showing the results of all of the tests required by this specification and applicable reference specifications.

5.2.5 Tests shall be in accordance with all applicable standard specifications and codes.

5.2.6 Failure of the manufacturer to comply with these specifications will be sufficient reason for rejection of any or all poles which do not comply with these specifications.

5.3 Concrete and Aggregate Testing:

5.3.1 Concrete used on owners' poles shall have the quality to meet the design strength and other requirements included in this specification.

5.3.2 For manufacturers that batch their own concrete, the manufacturer shall take a minimum of 8 concrete test cylinders per representative sample. Samples shall be taken at minimum intervals of one per day, one per 25 cubic yards of concrete batched, and with each change in raw material supplier for batches used to make the owner's poles. The test cylinders for each day's concrete that is batched shall be tested for compressive strength as follows:

Minimum of one for determining release strength;

Minimum of one at 7 days;

Minimum of one at 14 days; and

Minimum of one at 28 days.

5.3.3 For manufacturers that acquire concrete from outside sources, test cylinders shall

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be taken from each truck load of concrete and tested in accordance with this specification.

5.3.4 Test cylinders shall be prepared, then cured in the same curing environment as the pole itself or cured per the applicable ASTM specification.

5.3.5 Upon request from the owner, the manufacturer shall provide owner statistical data on concrete strength quality in accordance to applicable ACI and ASTM specifications. A correlation factor between rodded cylinders and the spun concrete, substantiated by test data, shall be provided.

5.4 Structure Testing:

5.4.1 Details of all test procedures contained herein and methods of measuring and recording test loads and deflections shall be specified by the manufacturer and approved by the owner prior to manufacture.

5.4.2 Material procurement for test poles shall be identical to material procurement procedures for regular production run poles.

5.4.3 The design load testing of any specific pole shall be on a full-scale basis. Costs for such testing shall be the responsibility of the owner, shall be separated from the manufacturer's bid, and shall be negotiated in advance of any test preparation.

5.4.4 The number, location, direction, holding time, sequence, and increments of the test loads along with the number, location, and direction of deflection readings for an individual pole test shall be approved by the owner prior to pole testing.

5.4.5 The method of attaching the test loads to the pole, applying the test loads, measuring and recording the test loads, and measuring and recording the deflections shall be approved by the owner prior to pole testing.

5.4.6 A full report listing results shall be submitted to the owner after completion of all testing. Copies of mill test reports shall be included in the load test report. The report shall also include a complete description of the load tests with diagrams and photographs. If required, the manufacturer shall provide the owner with the following testing data:

Location of testing;

Method of full scale testing: upright or horizontal; and

The pole tester shall issue the owner three (3) copies of the Pole Test Report. This report shall include descriptions, tools, and drawings describing the above test.

5.4.7 Use of any factory tested poles to meet order requirements shall be determined by

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the owner.

6. SHIPPING AND DELIVERY

6.1 Shipping

6.1.1 If appurtenances are to be supplied by the manufacturer of the concrete poles, each shipment shall be accompanied by a list of all parts, identifiable by structure type and number. Arms, bolts, and miscellaneous hardware shall be identified by the list for match up with the respective pole shaft.

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All parts required for any one structure shall be in one shipment, if possible.

6.1.2 The owner and owner's representative shall be notified prior to shipment that such shipment is to take place, and the owner reserves the right to postpone a shipment. The owner has the right to inspect the components prior to shipment. The notification of a shipment shall give quantities, weight, name of common carrier used, and expected time of arrival.

6.1.3 Poles shall be lifted and supported during manufacturing, stockpiling, and transporting only at the lifting or support points, or both, as designed by the manufacturer.

6.1.4 Transportation and site handling shall be performed with acceptable equipment and methods by qualified personnel. The manufacturer shall exercise precaution to protect poles against damage in transit.

6.1.5 Poles shall be sufficiently cured before shipment to resist forces from handling, transportation, and construction.

6.1.6 Handling instructions shall be included with the pole shipment.

6.2 Delivery

The owner (or the owner's construction contractor) may take delivery at a designated location or with the delivering carrier's cooperation and consent, have the poles transported to the installation locations with the carrier's equipment. The manufacturer shall coordinate and cooperate with the owner to ensure smooth and efficient delivery of poles. The owner will provide all labor, equipment, and materials for the unloading of poles at the project site. A pole is considered delivered when the pole is lifted from the trailer or semi trailer of the delivery carrier by the owner.

7. APPROVALS, ACCEPTANCE, AND OWNERSHIP

7.1 Upon delivery, poles shall be free of defects and blemishes which would have a detrimental effect on the structure capacity and/or longevity of the pole. They also

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shall be smooth, attractive, unscarred and in new condition. Poles not meeting these requirements shall be repaired or replaced by the manufacturer at no additional cost to the owner.

7.2 Poles failing to meet strength requirements, poles with circumferential or longitudinal cracks, poles failing to meet manufacturing tolerances or cover requirements, poles with exposed steel, poles with cavities that absorb water, and spliced poles that do not fit together properly or are distorted after mating shall be rejected by the owner and replaced by the manufacturer at no cost to the owner.

7.3 If the delivered weight of a pole will exceed the calculated weight by 5 percent, the manufacturer shall notify the owner of the actual weight before pole delivery. Any pole whose delivered weight exceeds or is below 10 percent of its calculated weight may be rejected by the owner.

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QUALIFICATION INFORMATION

1. **For individual bidders or individual members of a joint venture**

1.1 Legal status of Bidder *(attach copy).*
Place of registration: _____
Principal kind of business: _____
Power of attorney for signing the Bid *(attach).*

1.2 Total volume of supplies executed for the last (2) two years _____
_____

1.3 Supplies of a similar nature executed by the Supplier during the last two years *(*not less than three (3) supplies.

№	Name of Goods	Name of Clients, address and telephone	Contract Price

1.4 Copies of financial reports for the last three *years* (b*alance* sheets, loss and profit statements, auditors' reports, etc.).List below and attach copies.
_____
_____

2.5 Evidence of access to financial resources (cash in hand, lines of credit, overdraft facility etc.).List below and attach copies of supporting documents.
_____
_____

2.6 Evidence of compliance with NIS, IRD and TIN Certificate and VAT Registration for VATable item/s. (attach supporting documents).
_____
_____

2.7 Information on all claims, arbitration or other legal proceedings currently being examined or already settled.

Other party (ies) of trial	Cause of dispute	Amounts disputed

2.0 Any other information required by the Procuring Entity to execute the Contract
_____

2.1 The Supplier certifies that he meets all the qualification criteria and requirements, in accordane with normative legal documents.

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I certify the authenticity of all the above information.

_____	_____	_____
(Full name)	(Title)	(Signature and seal)

Dated on « _____» day of _____201___
(Date)

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SUPPLIER'S BID

Date: _____
IFB No: GPL-PI-026-2014_____

TO: _____
(Name and address of Procuring Entity)

Dear Sir / Madam,

Having examined the bidding documents, including the Annexes and Addenda No _____ [specify number], the receipt of which is hereby acknowledged, we, the undersigned, offer to supply and provide _____ [description of goods and related services] in accordance with the requirements of the bidding documents to the total sum of _____ [Total Amount of Bid in Words and Figures], confirmed by the attached Price Schedule which is a part of this Bid.

(a) We, including all subcontractors, regarding any part of the Contract, in accordance with the bidding documents, have no conflict of interests pursuant to sub clause 2 (i) of the Instructions to Bidders;

(b) We, including all subcontractors, regarding any part of the Contract, in accordance with the bidding documents, have not been declared by the [authorized State body] [National Board] on procurement to be ineligible, or are not ineligible, in accordance with the legislation of Guyana.

We undertake, if our Bid is accepted, to supply the Goods, in accordance with a delivery schedule given in the Schedule of Requirements.

If our Bid is accepted, we undertake to furnish the Performance security in the form of _____ to the amount of _____, comprising _____% of the Contract Price in order to execute the Contract properly and within the time period(s) specified in the Bidding Documents.

We hereby confirm that this bid shall be valid during _____ days starting from the date established for bid opening, and it shall be binding until the expiry of the indicated period.

Prior to the preparation and execution of a formal Contract, this Bid together with your written confirmation of its acceptance shall form a binding Contract on the parties.

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

Dated the_____ day of _____ 20__

Duly authorized to sign the Bid for and on behalf of

_____
(N*ame of Supplier*)

_____	_____	_____
(*Full name)*	*(Title)*	*(Signature and seal)*

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Supply Contract for Goods

THIS CONTRACT made the _____ day of _____ 20__ between _____ [name of Procuring Entity] (hereinafter referred to as "the Procuring Entity"), on the one hand, and_____ [name of Supplier] from _____ [city and country of Supplier] (hereinafter referred to as "the Supplier"), on the other hand have come to an Agreement on the following:

The Procuring Entity has announced bid for procurement of goods and services, namely **Procurement of Reinforced Concrete Poles** and has accepted the Supplier's bid for the supply of indicated goods and services to the sum of _____[Contract Price in words and figures] (hereinafter referred to as "the Contract Price").

THIS CONTRACT WITNESSES AS FOLLOWS:

1. In this Contract, the terms and expressions have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. The following documents shall form the Contract and shall be deemed its integral part, viz.:
   (a) Procuring Entity's Notification of Award;
   (b) Bid and Price Schedule submitted by Bidder;
   (c) Schedule of Requirements;
   (d) Technical Specifications;
   (e) General Conditions of Contract;
   (f) Special Conditions of Contract;
   (g) Other documents included in the Contract documents;

3. This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.

4. In consideration of the payments to be made by the Procuring Entity to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Procuring Entity to provide the Goods and Services, and remedy defects therein in conformity in all respects with the provisions of the Contract.

5. The Procuring Entity hereby agrees to pay the Supplier in consideration of the delivery of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS of the foresaid, the parties hereto have caused this Contract to be executed in accordance with the legislation of Guyana the day and year first above written in the beginning of the document.

Signed and Sealed _____ [Full name and title of Procuring Entity's representative]
Signed and Sealed _____ [Full name and title of Supplier's representative]

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BID SECURITY
(Bank Guarantee)

Whereas _____ [name of Bidder] (hereinafter referred as "the Bidder") is ready to submit his bid dated _____[date of bid submission] for the supply _____[name and/or description of goods] (hereinafter referred as "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 referred as "the Bank"), are bound to _____ [name of Procuring Entity] to the sum of _____, by which payment to the indicated Procuring Entity shall be made in whole and in a timely manner; the Bank is bound on behalf of its name, its successors and authorized persons. This is to confirm that the license issued to the Bank shall provide for activity on issuance of the guarantee, and the person(s) signing that 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, 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 on the Form of Bid; or
2. If the Bidder having received notice from the Procuring Entity that his bid is accepted within the period of bid's validity:
   (a) fails or rejects to sign the Contract at the request of; or
   (b) fails or rejects to furnish the performance security in accordance with the Instructions to Bidders;

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

This guarantee shall remain in force 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 abovementioned date.

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

Dated on «____» day of _____20__

Address of the Bank issuing guarantee: _____

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Bid-Securing Declaration

[The Bidder shall fill in this Form iif applicable pursuant to BDS.]

Date:_____ [insert date (as day, month and year) of Bid Submission]
IFB No.:_____ [insert number of bidding process]
Alternative No.:_____ [insert identification No if this is a Bid for an alternative]

To: _____[insert complete name of Procuring Entity]

We, the undersigned, declare that:

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

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

(a) have withdrawn our Bid during the period of bid validity specified by us in the Bidding Data Sheet; or

(b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB.

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

4. We understand that if we are a Joint Venture, the Bid Securing Declaration must be in the name of the Joint Venture that submits the bid. If the Joint Venture has not been legally constituted at the time of bidding, the Bid Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed: _____[insert signature of person whose name and capacity are shown] In the

capacity of _____[insert legal capacity of person signing the Bid Securing Declaration]

Name: _____[insert complete name of person signing the Bid Securing Declaration]

Duly authorized to sign the bid for and on behalf of: [insert complete name of Bidder]

Dated on _____ day of _____, _____ [insert date of signing]

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PERFORMANCE SECURITY
(Bank Guarantee)

TO: _____
[Name of Procuring Entity]

WHEREAS _____ [name of the Supplier] (hereinafter called "the Supplier") has undertaken, in accordance with the Contract No. _____[Contract number] dated _____ 201 _ to supply _____[description of Goods and Services] (hereinafter called "the Contract"),

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a reputable bank to the sum specified therein as a security for compliance with the Supplier's obligations under the Contract,

AND WHEREAS we have agreed to furnish the Supplier with a security,

THEREFORE WE hereby confirm that we are the Guarantors and are responsible to you on behalf of the Supplier, up to a total of _____ (amount of security in words and figures) and, we undertake to pay you, on your first request notifying of the Supplier's default with the Contract, and without cavil or argument, any sum or sums within the above limits, as aforesaid, without your needing to show grounds or reasons of your request or the sum specified therein.

Any modification or addition, or amendment in the terms of Contract which may be made by the Procuring Entity and the Supplier by Additional Agreement shall in no way release us from obligations under the Guarantee, and we waive any notice of modification, addition, or amendment. This guarantee shall be valid until full completion of the Contract Conditions by the Supplier. Also, 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, it is already received, and there is no other approval required

This guarantee shall be valid till the _____day of _____ 201

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

Dated on _____ day of _____201___

Address of the Bank issuing guarantee: _____

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Letter of Acceptance

_____ (date)

To: _____
(Name of Supplier)

_____
(Address of Supplier)

We hereby notify you that your bid dated the _____ day of _____201__, for the supply of Reinforced Concrete Poles up to a total of_____
(Amount in figures and words)

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

Simultaneously, we send you the Form of Contract and request you, pursuant to Clause 20.1 of the Instructions to Bidders, during seven (7) days to sign and date the Form of Contract, and return it at our address. Jointly with the signed Contract, we request you to furnish the performance security, in accordance with ITB Clause 20.2.

You hereby entrusted to start supply of the Goods, in accordance with the terms and conditions of a Contract.

Name of agency _____

Full name and Title _____

Signature of Authorized Representative _____

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Power of Attorney

TO:_____ [name of Procuring Entity]

WHEREAS _____ [name of Supplier], who is the Supplier _____[name and/or description of goods].

do hereby authorize _____ [name and address of Supplier's Representative] to submit the Bid, and sign the Contract based on Invitation for Bids for the abovementioned goods to be supplied by us, and

_____

[Full name, title, signature for and on behalf of Supplier]

Dated on «_____» day of _____20___ (Seal)

(Date)

Note: The power of attorney must be drafted on a letterhead paper of the Supplier, and signed by a competent person authorized by the Supplier. The Bidder shall include this power of attorney in his Bid.

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Evaluation and Qualification Criteria

1. Evaluation Criteria

The Purchaser's evaluation of a bid may take into account, in addition to the Bid Price the following :-

(a) All documents are properly signed.

(b) Delivery schedule.

The Goods specified in the List of Goods are required to be delivered within the acceptable time range specified in Delivery Schedule. Credit will be given to deliveries before the earliest date, and bids offering delivery after the final date shall receive 0 points. Within this acceptable period, a maximum of **20 points** will be awarded to bidders that deliver the goods to dates closer to the earliest delivery date.

(c) Technical Specifications and productivity of the items- evidence of the performance reliability of these items shall be provided in this bid. A maximum of **30 points** will be awarded in this category.

(d) Any warranty and guarantee given. The bidder that offer the maximum warranty period shall be considered as the best option and for bid comparison a maximum of **15 points** will be awarded.

(e) The projected operating and maintenance costs during the life of the Goods: A maximum of **15 points** will be awarded for in this category for the highest ranked item.

(f) Lowest Cost

The Criteria provides for the contract to be awarded to the bidder whose bid is determined to be substantially technically responsive to the bid document and who offers the lowest evaluated price.

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