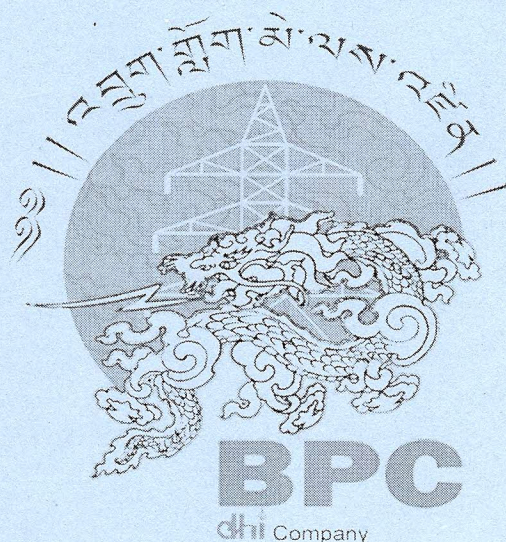


**BHUTAN POWER CORPORATION LIMITED
DISTRIBUTION SERVICES
DISTRIBUTION CONSTRUCTION DEPARTMENT
ELECTRIFICATION DIVISION
THIMPHU : BHUTAN**



**BIDDING DOCUMENT FOR LABOUR
CONTRACT OF PLANNED WORK**

Tender No. BPC/DS/DCD/ED/PW/C-01 dated July 18, 2020

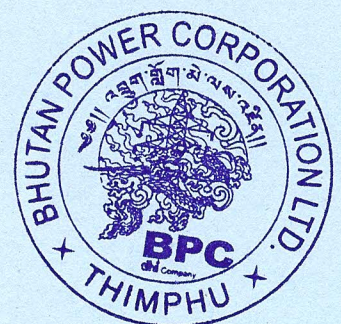


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1. Integrity Pact
2. Section I - Invitation for Bids
3. Section II - Instructions to Bidders
4. Section III - Conditions of Contract
5. Section IV - Technical Specifications and Drawings
6. Section V - Price Schedules
7. Section VI - Bid Form
8. Section VII - Other Forms
9. Sample Bill of Quantities



INTEGRITY PACT



INTEGRITY PACT

1 General:

Whereas,

representing the Bhutan Power Corporation Limited, Royal Government of Bhutan, hereinafter referred to as the “Employer” on one part, and _____ (Name of Bidder or his/her authorized representative, with power of attorney) representing M/s _____ (Name of Firm) as the other part hereby execute this agreement as follows:

This agreement should be a part of the tender document, which shall be signed by both the parties at the time of purchase of bidding documents and submitted along with the tender documents. This IP is applicable only to “Small” scale works, goods and services, the threshold of which will be announced by the government from time to time. The signing of the IP shall not apply to framework contracting such as annual office supplies, etc.

2 Objectives:

Whereas, the Employer and the Bidder agree to enter into this agreement, hereinafter referred to as IP, to avoid all forms of corruption or deceptive practice by following a system that is fair, transparent and free from any influence/unprejudiced dealings in the **bidding process**¹ and **contract administration**², with a view to:-

- 2.1 Enabling the Employer to obtain the desired contract at a reasonable and competitive price in conformity to the defined specifications of the works, goods or services; and
- 2.2 Enabling bidders to abstain from bribing or any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also refrain from bribing and other corrupt practices

3. Scope

The validity of this IP shall cover the bidding process and contract administration period.

4. Commitments of the Employer:

The Employer Commits itself to the following:-

- 4.1 The Employer hereby undertakes that no official of the Employer, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the Bidder, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process and contract administration.

¹ Bidding process, for the purpose of this IP, shall mean the procedures covering tendering process starting from bid preparation, bid submission, bid processing, and bid evaluation.

² Contract Administration, for the purpose of this IP, shall mean contract award, contract implementation, authorized sub-contracting and contract handing/taking over.



- 4.2 The Employer further confirms that its officials has not favored any prospective Bidder in any form that could afford an undue advantage to that particular Bidder in the bidding process and contract administration and will treat all Bidders alike.
- 4.3 Officials of the Employer, who may have observed or noticed or have reasonable suspicion shall report to the head of the employing agency or an appropriate government office any violation or attempted violation of clauses 4.1 and 4.2.
- 4.4 Following report on violation of clauses 4.1 and 4.2 by official(s), through any source, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings shall be initiated by the Employer and such a person shall be debarred from further dealings related to the bidding process and contract administration.

5 Commitments of Bidders:

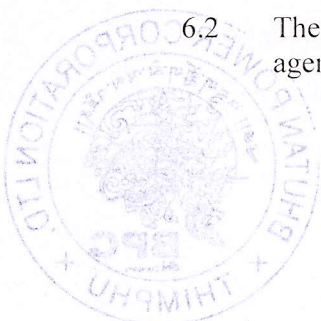
The Bidder commits himself/herself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of the bidding process and contract administration in order to secure the contract or in furtherance to secure it and in particular commits himself/herself to the following:-

- 5.1 The Bidder shall not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favor, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Employer, connected directly or indirectly with the bidding process and contract administration, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding process and contract administration.
- 5.2 The Bidder shall not collude with other parties interested in the contract to manipulate in whatsoever form or manner, the bidding process and contract administration.
- 5.3 If the Bidder(s) have observed or noticed or have reasonable suspicion that the provisions of the IP have been violated by the procuring agency or other Bidders, the Bidder shall report such violations to the head of the procuring agency.

6 Sanctions for Violation:

The breach of any of the aforesaid provisions shall result in administrative charges or penal actions as per the relevant rules and laws.

- 6.1 The breach of the IP or commission of any offence (forgery, providing false information, mis-representation, providing false/fake documents, bid rigging, bid steering or coercion) by the Bidder, or any one employed by him, or acting on his/her behalf (whether with or without the knowledge of the Bidder), shall be dealt with as per the terms and conditions of the contract and other provisions of the relevant laws including De-barment Rules.
- 6.2 The breach of the IP or commission of any offence by the staff of the procuring agency shall be dealt with as per rules and laws of the land in force.



7. Monitoring and Administration:

- 7.1 The respective procuring agency shall be responsible for administration and monitoring of the IP as per the relevant laws.
- 7.2 The Bidder shall have the right to appeal as per the arbitration mechanism contained in the relevant rules.

We, hereby declare that we have read and understood the clauses of this agreement and shall abide by it.

The parties hereby sign this Integrity Pact at _____ on _____

Affix
Legal
Stamp

Affix
Legal
Stamp

EMPLOYER

BIDDER/REPRESENTATIVE

CID:

CID:

Witness: _____

Witness: _____

Name:

Name:

CID:

CID:



SECTION I

INVITATION FOR BIDS



INVITATION FOR BIDS

Date: July 18, 2020

Tender No.: BPC/DS/DCD/ED/PW/C-01

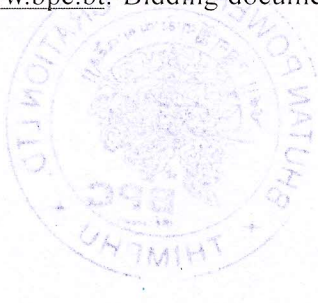
1. BPC invites sealed bids from the below mentioned Class categories of Bhutanese National with W4 (Power & Telecom Works) valid trade License and registered with the Construction Development Board for construction of electricity distribution infrastructure works under the following package.

Sl. No	Dzongkhag	Package Name	Estimated cost (in Millions)	Bid Security Amount (Nu.)	Contractor's Classification
1	Thimphu	N6-PW	1.301	26,025.00	Small

2. Interested eligible Bidders may obtain further information from and inspect the bidding documents at the office of :

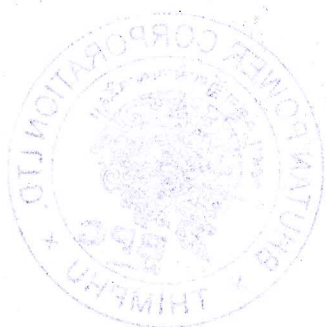
**The Senior Manager,
Electrification Division,
Distribution Construction Department,
Bhutan Power Corporation Limited,
Chubachu: Thimphu.
Telephone No. +975 02 321846; Facsimile No. +975 02 321847
Mobile No. +975 17608936**

3. A complete set of bidding documents may be purchased by interested Bidder upon submission of an appropriate written application to the address above and upon payment of a non-refundable fee of Nu. 1,000.00 (Ngultrum one thousand only) together with copies of valid trade license, CDB's registration certificate and tax clearance certificate. The sale of bidding documents will be from July 20, 2020 to August 19, 2020 (Till 17:00 Hours).
4. Bids must be delivered to the above office at or before 13:00 hours on August 20, 2020 and must be accompanied by a Bid Security amount mentioned above in Bhutanese Ngultrum (Nu.).
6. Bids will be opened in the presence of Bidder or Bidder(s)' representatives who choose to attend at 14:30 hours on August 20, 2020 at the Conference Hall of Electrification Division, Bhutan Power Corporation Limited, Chubachu Thimphu, Bhutan.
7. BPC will not be responsible for any expenses incurred by Bidders in connection with the preparation or delivery of bids.
8. The prospective Bidders could view the bidding documents in the purchaser's website www.bpc.bt. Bidding documents can be downloaded for free and the Bidders should



the bidding documents.

However, the Bidders who have downloaded and printed the bidding documents by themselves should register with Electrification Division, Distribution Construction Department at or before 17:00 hours on August 19, 2020. The registration shall be done through written application together with valid trade license, CDB's registration certificate and tax clearance certificate. The Bidders should bind the downloaded and printed binding document properly. Bidder's qualification criteria are stipulated in the Instructions to Bidders of the bidding documents.



SECTION II
INSTRUCTIONS TO
BIDDERS



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SECTION II

INSTRUCTION TO BIDDERS

A. General

1. Scope of Bid

1.1 Bhutan Power Corporation Limited (BPC) (hereafter referred to as "the Employer") wishes to receive sealed Bids for Labour Contract of Electrical Works in Thimphu Dzongkhag. The scope of works include laying of MV UG cables in duct, construction of cable trench and cable tray support and direct burial of MV and UG cable, termination of cables, erection, testing, commissioning of UG lines and substations including loading, transportation, delivery of all materials and equipment to sites, storage, tree felling, clearance of ROW, dismantling, etc. (hereinafter referred to as "Works"). The works are classified under the following package.

(i) Package N6-PW (Thimphu Dzongkhag)

- a) Laying of 33 kV cable in the cable trench from Druk School junction to 33/11 kV Substation at JDWNRH.
- b) Construction of cable trench and cable tray support at 33/11 kV Substation, JDWNRH.
- c) 11 kV UG line extension from BPC Substation at Bjemina to M/s Dharma Arts and Crafts, Bjemina Industrial Park including LV UG line construction.

1.2 The successful Bidder will be expected to complete the works within the stipulated time from the date of commencement of works as indicated in Article III, Clause No.11 of Conditions of Contract.

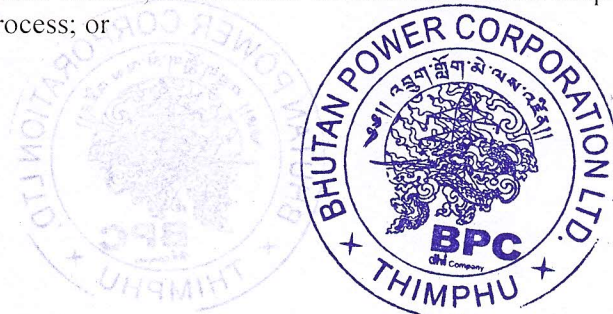
2. Eligible Bidders

2.1 This Invitation for Bids is open to Small Class Bhutanese registered Contractors with W4 (Power and Telecom Works) valid Trade License and Construction Development Board registration.

2.2 Bidders shall provide such evidence of their eligibility satisfactory to the Employer, as the Employer shall reasonably request.

2.3 A Bidder shall not have a conflict of interest. All Bidders found to have conflict of interest shall be disqualified. Bidders may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- (a) they have a relationship with each other, directly or through third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or



- (b) Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Works that are the subject of the Bid or in any other way provided consulting services in any aspect of the preparatory stages leading up to the issue of these bidding documents; or
- (c) Bidder lends, or temporarily seconds its personnel to firms or organizations which are engaged in consulting services for the preparation related to procurement for or implementation of the project, if the personal would be involved in any capacity on the same project.

3. Cost of Bidding and Site Visit

- 3.1 The Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Employer will in no case be responsible or liable for those costs.
- 3.2 It is mandatory for the bidders to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for the Works. The costs of visiting the Site shall be at the bidder's own expense and at his own risk. Electrification Division, Thimphu will facilitate the site visit to the interested bidders from August 03, 2020 to August 05, 2020.

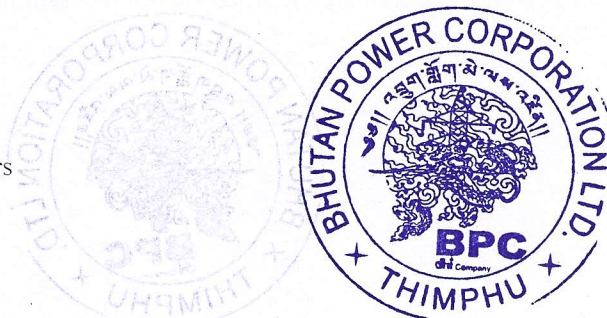
The Bidder shall make appointment for field visit and the contact person(s) for the visits shall be as below.

**The Senior Manager,
Electrification Division,
Distribution Construction Department,
Bhutan Power Corporation Limited,
Chubachu: Thimphu.
Telephone No. +975 02 321846; Facsimile No. +975 02 321847
Mobile No. +975 17608936**

- 3.3 The Bidders and any of their personnel or agents will be granted permission by the Employer to enter upon its premises and land for the purpose of such inspection, but only upon the condition that the Bidders, their personnel and agents, will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of the inspection.

4. Pre-bid Meeting

- 4.1 Not Applicable.



B. The Bidding Documents

5 Bidding Documents

5.1 The bidding procedures and contract terms are prescribed in the bidding documents. In addition to the Invitation for Bids, the bidding documents include:

- I Integrity Pact
- II Instructions to Bidders;
- III Conditions of Contract;
- IV Technical Specifications and Drawings;
- V Price Schedules and Sample Bill of Quantities;
- VI Bid Form; and
- VII Sample Forms
 - Bid Security Form
 - Contract Form
 - Performance Security Form
 - Bank Guarantee for Advance Payment
 - Form of Information for Establishment of Bidder's Eligibility
 - Form of Information for Establishment of Bidder's Qualification
 - Confirmation of Litigation History

5.2 The Bidders are expected to examine the bidding documents, including all instructions, forms, terms and specifications. Failure to furnish all information required by bidding documents or submission of a Bid not substantially responsive to the bidding documents in every respect will result in the rejection of the Bid.

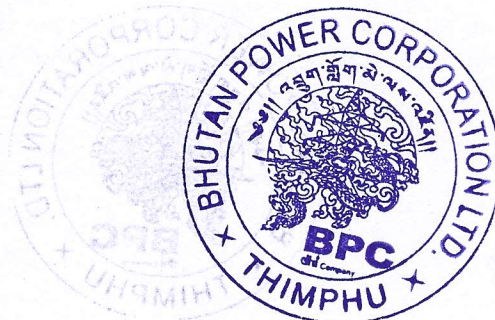
6. Clarification of Bidding Documents

6.1 Prospective Bidders requiring any further information or clarification of the bidding documents may notify the Employer in writing at the Employer's mailing address indicated under Clause 20.2. The Employer will respond in writing to any request for information or clarification of the bidding documents, which it receives no later than ten (10) days prior to the submission of Bids. The Employer's response including an explanation to the query will be sent in writing to all prospective Bidders who purchased the bidding documents.

7. Amendments of Bidding Documents

7.1 At any time prior to the deadline for submission of Bids, the Employer may, for any reason, whether at its own initiative or in response to a clarification requested by prospective Bidder, modify the bidding documents by issuing addendum.

7.2 The amendment shall be part of the bidding documents, pursuant to Sub-Clause 5.1, and it will be notified in writing or by fax to all prospective Bidders who have received the bidding documents, and will be binding on them.



- 7.3 In order to afford prospective Bidders reasonable time in which to take the amendment into account in preparing their Bids, the Employer may, at its discretion, extend the dead line for the submission of Bids.

C. Preparation of Bids.

8. Language of Bid

- 8.1 The Bids prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidders and the Employer, shall be written in the English language.

9 Documents Comprising the Bid

- 9.1 The Bid prepared by the Bidders shall comprise of the following components:
- (a) Bid Form and Price Schedule completed in accordance with Clause 10, 11, 12;
 - (b) Documentary evidence establishing, in accordance with Clause 13, that the Bidder is eligible to bid.
 - (c) Documentary evidence establishing in accordance with Clause 14, that the Bidder is qualified to perform the Contract if it's Bid is accepted;
 - (d) Bid security furnished in accordance with Clause 16.
 - (e) Written power-of-attorney authorizing the signature by Bidders in accordance with Clause 19.2.

10 Bid Form

- 10.1 The Bidder shall complete **an original and (two) copies of the Bid Form and the appropriate Price Schedule** furnished in the bidding documents.

Bid forms not duly filled and signed and sealed appropriately shall be treated as non-responsive and the Bid shall be rejected.

11. Bid Prices

- 11.1 The Bidder shall complete the appropriate Price Schedules included herein, stating the unit prices, total price per item and the total amount. Prices quoted shall follow strictly the format provided herein.
- 11.2 Unless stated otherwise in the bidding documents, the Contract shall be for the whole works, based on the schedule of unit rates and prices submitted by the Bidders.
- 11.3 The Bidder shall fill in rates and prices for all items of the works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will



not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities.

- 11.4 All duties, taxes and other levies payable by the Contractor under the Contract, or any other cause, as of the date seven (7) days prior to the deadline for submission of Bids shall be included in the rates and prices and the total bid price submitted by the Bidder.
- 11.5 Rates quoted by the Bidder shall remain fixed and valid until completion of the Contract performance and will not be subject to variation on any account. A Bid submitted with price adjustment condition will be treated as non-responsive and will be rejected.
- 11.6 Conditional tenders shall be rejected without any further explanation.

12 Bid Currencies

- 12.1 Rates shall be quoted in Ngultrum.

13 Documents Establishing Eligibility of the Bidder.

- 13.1 The Bidder shall furnish, as part of its Bid, certification establishing the Bidder's eligibility to bid pursuant to Clause 2.
- 13.2 The Bidder is a registered qualified electrical Contractor. If in case, the license and the CDB registration certificate have expired during the bid submission, the Bidder shall submit letters from competent authorities validating the documents.
- 13.3 The Bidder does not anticipate change in ownership during the proposed period of work (if such a change is anticipated, the scope and effect thereof shall be defined).
- 13.4 The Bidder shall submit proposals of work method and schedule, in sufficient detail to demonstrate the competency of the Bidder's proposals to meet the completion schedule referred to in Sub-Clause 1.2 above.

14. Documents Establishing the Bidder's Qualifications to Perform the Contract

- 14.1 The technical qualification of the Bidder to perform the required works is the most important criteria and each Bidder shall submit the duly filled Form No.6 in Section VII. A minimum of one site supervisor with electrical Diploma/RTI/VTI/NC2 with qualification certificate shall be submitted with the Bid. The supervisor shall be proposed as the Accident Prevention Officer or separate personnel who have sufficient experience shall be submitted. Form No.6 must be accompanied with the qualification certificate.
- 14.2 The Bidder shall provide in Form No.6 in Section VII, a list of tools and equipment related to the works including vehicles to show that the Bidder has enough tools and equipment to execute the work immediately.



15 Documents Establishing the Goods' and Services Conformity to the Bidding Documents

15.1 Not applicable in this contract.

16 Bid security

16.1 The Bidder shall furnish, as part of its Bid, a bid security in the amount as given below.

Sl.No	Dzongkhags	Package Name	Bid Security Amount (Nu.)
1	Thimphu	N6-PW	26,025.00

16.2 The bid security shall be denominated in the currency of the Bid. It shall be valid for 120 days (i.e. from August 20, 2020 to December 17, 2020) from the date of opening of Bids and shall be in one of the following forms acceptable to the Employer:

(a) Cash Warrant/Bank Draft/Bank Guarantee issued by a reputable bank in Bhutan acceptable to the Employer in the form provided in the bidding documents or another form subject to prior approval of the Employer.

(b) The Bank Guarantee shall be drawn in favour of Director, Finance & Accounts Services, Bhutan Power Corporation Limited, Thimphu, Bhutan.

(c) Cash, personal cheque, etc., will not be accepted as a bid security and the Bid will be treated as non-responsive and will be rejected.

16.3 Any Bid not secured in accordance with Sub-Clause 16.1 and 16.2 above will be treated as non-responsive and will be rejected.

16.4 The unsuccessful Bidder's bid security will be discharged/returned as promptly as possible upon award of Contract to the successful Bidder, but in any event not later than thirty (30) days after the expiration of the period of bid validity.

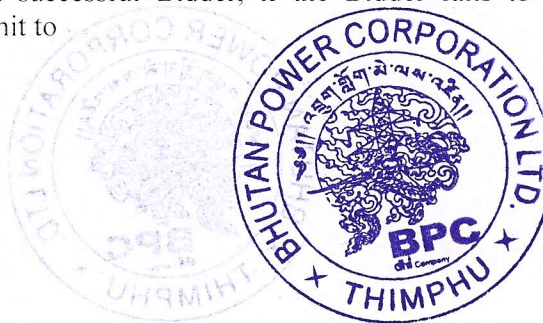
16.5 The successful Bidder's bid security will be discharged/returned upon furnishing the performance security and the Bidder's executing the Contract.

16.6 The bid security may be forfeited:

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

(b) if the Bidder does not accept the correction of its bid prices; or

(c) in the case of a successful Bidder, if the Bidder fails to comply with the specified time limit to



- (i) sign the Contract; or
- (ii) furnish the performance security.

17. Period of Validity of Bids

- 17.1 Bids shall remain valid for a period of **90 days** (From August 20, 2020 to November 17, 2020) from the date of opening of Bids.
- 17.2 Notwithstanding Sub-Clause 17.1 above, the Employer may solicit Bidder's consent to an extension of the period of bid validity. The request and the responses thereto shall be made in writing or by fax. If the Bidder agrees to the extension request, the validity of the bid security provided under Clause 16 shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security. A Bidder agreeing to the request will not be required or permitted to modify its Bid, but will be required to extend the validity of its bid security for the period of the extension, and in compliance with Clause 16 in all respects.

18 Alternative Bids

- 18.1 Not applicable in this contract.

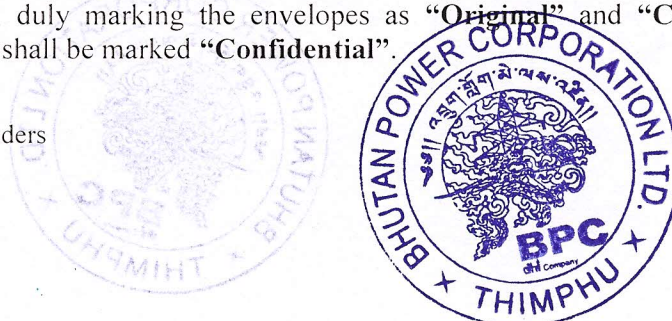
19 Format and Signing of Bid

- 19.1 The Original Bid Form and accompanying documents (as specified in Clause 10), clearly marked **"Original Bid", plus "Two (2) copies"** must be received by the Employer at the date, time and place specified pursuant to Clause 20 and 21. In the event of any discrepancy between the original and the copies, the original will govern.
- 19.2 The original and the copies of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the Bidder. Such authorization shall be by a written Power of Attorney accompanying the Bid. If the Bid is not accompanied by the written Power of Attorney, the Bid will be treated as non-responsive and will be rejected. All pages of the Bid, except for un-amended printed literature, shall be initialed by the person or persons signing the Bid. The name and position held by each person signing must be typed or printed below the signature.
- 19.3 The Bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

D. Submission of Bids

20. Sealing and Marking of Bids

- 20.1 The Bidder shall seal the original and each copy of the Bid in an inner and an outer envelope, duly marking the envelopes as **"Original"** and **"Copy"**. The outer envelope shall be marked **"Confidential"**.



- 20.2 The inner and outer envelopes shall:
- (a). be addressed to the Employer at the following address:

**Senior Manager,
Electrification Division,
Distribution Construction Department,
Bhutan Power Corporation Limited,
Chubachu: Thimphu.
Telephone No. +975-2-321846; Facsimile No. +975-2-321847
Mobile No. +975 17608936**

- (b). bear the following identification:

- **Bid Reference No. BPC/DS/DCD/ED/PW/C-01.**
- **DO NOT OPEN BEFORE 14:30 hours on August 20, 2020.**

In addition to the identification required in Sub-Clause 20.2, the inner envelope indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared "Late" pursuant to Clause 22.

- 20.3 If the outer envelope is not sealed and marked as required by Sub-Clause 20.1 and 20.2, the Employer will assume no responsibility for the Bid misplacement or premature opening.

21 Deadline for Submission of Bids

- 21.1 The original Bid, together with the required copies, must be received by the Employer at the address specified in Sub-Clause 20.2 no later than **13:00 hours on August 20, 2020.**
- 21.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by issuing an addendum in accordance with Clause 7, in which case all rights and obligations of the Employer and the Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.
- 21.3 Bidders or their authorized representatives only, shall be allowed to attend the bid opening. Procuring Agency shall ensure and include in the bid document that the bidder's representative attending the bid opening shall have an Authorization Letter from the bidder, without which the representative shall not be permitted to attend the bid opening. Each Bidder will be allowed only one representative to attend the Bid opening.

22. Late Bids

- 22.1 Any Bid received by the Employer after the deadline for submission of Bids prescribed by the Employer, pursuant to Clause 21, will be declared "**Late**" and rejected and returned unopened to the Bidder.



23. Modification and Withdrawal of Bids

- 23.1 The Bidder may modify or withdraw its Bid after the Bid's submission, provided that written notice of the modification or withdrawal is received by the Employer prior to the deadline prescribed for submission of Bids.
- 23.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and delivered in accordance with provisions of Clause 20, with the outer and inner envelopes additionally marked "MODIFICATION" or "WITHDRAWAL", as appropriate. A withdrawal notice may also be sent by fax but must be followed by signed confirmation copy.
- 23.3 No Bid may be modified by the Bidder after the deadline for submission of Bids.
- 23.4 Withdrawal of a Bid during the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified in the Form of Bids may result in the forfeiture of the Bid Security pursuant to Clause 16.
- 23.5 Bids requested to be withdrawn in accordance with Clause 23.1 shall be returned unopened to the Bidders.

E. Bid Opening and Evaluation

24. Opening of Bids by Employer

- 24.1 The Employer will open Bids, including modifications made pursuant to Clause 23, in the presence of Bidder or Bidder(s)' representatives who choose to attend, at **14:30 hours on August 20, 2020** in the **Conference Hall of Electrification Division, Chubachu Thimphu**. The Bidder or Bidder(s)' representatives who are present shall sign a register evidencing their attendance.
- 24.2 Envelopes marked "WITHDRAWAL" shall be opened and read out first. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 23 shall not be opened, but returned to the Bidder.
- 24.3 The Bidders' names, prices of Bids, all discounts offered, modifications and Bid withdrawals, and the presence or absence of the requisite bid security, and such other details as the Employer, at its discretion, may consider appropriate will be announced and recorded at the time of opening. Any Bid Price or discount which is not read out and recorded at Bid opening will not be taken into account in Bid evaluation. No Bid shall be rejected at bid opening except for late Bids, in accordance with Clause 22.1.

25 Process to be Confidential

- 25.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a Contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort



by a Bidder to influence the Employer's processing of Bids or award decision may result in the rejection of the Bidder's Bid.

26. Clarification of Bids

- 26.1 To assist in the examination, evaluation and comparison of Bids, the Employer may, at its discretion, ask the Bidder for a clarification of its Bid. All requests for clarification and the responses shall be in writing, and no change in the price or substance of the Bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids in accordance with Clause 27.4.

27. Preliminary Examination of Bids

- 27.1 The Employer will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order.
- 27.2 Prior to the detailed evaluation, pursuant to Clause 29, the Employer will determine the substantial responsiveness of each Bid to the bidding documents. A substantially responsive Bid is one which conforms to all the terms and conditions of the bidding documents without material deviation or reservation. A material deviation, reservation, or omission is one;
- (i) which affects in any substantial way the scope, quality, completion schedule or performance of the Works;
 - (ii) which limits in any substantial way, inconsistent with the provision of the bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or
 - (iii) Whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.
- 27.3 A Bid determined as not substantially responsive will be rejected by the Employer and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
- 27.4 Arithmetical errors will be rectified on the following bases;
- (i) If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and the quantity, the unit price shall prevail and the total price per item will be corrected.
 - (ii) If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.



27.5 The amount stated in the Form of Bid will be adjusted by the Employer in accordance with the above procedure for the corrections of errors and, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount to Bid, its Bid will be rejected, and the bid security will be forfeited.

28. Conversion to Ngultrum

28.1 The Bid Price shall be in Ngultrum.

29. Evaluation and Comparison of Bids

29.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause 27.

29.2 In evaluating the Bids, the Employer will determine for each Bid the evaluated bid price by adjusting the bid price as follows:

- (a) making any correction for errors pursuant to Clause 27;
- (b) applying any discounts offered by the Bidder for the award;

29.3 The Employer reserves the right to accept or reject any variation, deviation or alternative offer. Variation, deviation, alternative offers and other factors which are in excess of the requirements of the bidding documents or otherwise result in the accrual of unsolicited benefits to the Employer shall not be taken into account in bid evaluation.

29.4 The estimated effect of the price adjustment provision of the Condition of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.

29.5 When the prices in the particular bid appear abnormally low (below 10% of the Analyzed Market Value) or the bid appears seriously unbalanced as determined, the Employer shall seek written explanations from the bidder submitting the low or seriously unbalanced bid and shall request the bidder an analysis of rates of the relevant items. Based on the bidder's written explanation, decision shall be taken to reject/accept the abnormally low or seriously unbalanced bids.

When the prices in the particular bid appear abnormally high (above 10% of the Analyzed Market Value), the Employer shall seek written explanations from the bidder submitting the high bid and shall request the bidder an analysis of rates of the relevant items. Based on the bidder's written explanation, decision shall be taken to reject/accept the abnormally high bids.

30 Contacting the Employer

30.1 Subject to Clause 26, no Bidder shall contact the Employer on any matter relating to its Bid, from the time of bid opening to the time of the Contract is awarded.



- 30.2 Any effort by a Bidder to influence the Employer in the Employer's decisions in respect of bid evaluation, bid comparison or Contract award will result in the rejection of the Bidder's Bid.

31 Employer's Right to Accept Any Bid and to reject any or All Bids

- 31.1 The Employer reserves the right to accept or reject any Bid and to annul the bidding process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

F. Award of Contract

32 Award

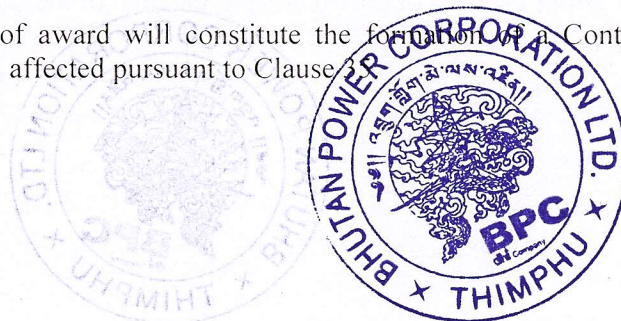
- 32.1 The Employer will determine to its satisfaction whether the Bidder selected as having the lowest evaluated responsive Bid is qualified to satisfactorily perform the Contract.
- 32.2 The determination will take into account the Bidder's financial and technical capabilities. It will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to Clause 14, as well as such other information as the Employer deems necessary and appropriate.
- 32.3 An affirmative determination will be a prerequisite for award of the Contract to the Bidder. A negative determination will result in rejection of the Bidder's Bid.
- 32.4 The Employer will award the contract to the lowest evaluated responsive bidder. In the event that the lowest evaluated bidder fails to conclude the contract, the employer may then call the successive lower responsive bidders for negotiations to conclude a contract with the approval of the Competent Authority.

33 Employer's Right to Vary Quantities at Time of Award

- 33.1 The Employer reserves the right at the time of award of Contract to increase or decrease by up to twenty percent (20%) the quantity, without any change in rate or other terms and conditions.

34 Notification of Award

- 34.1 Prior to the expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful Bidder in writing by registered letter or by fax that its Bid has been accepted. This letter (hereinafter and in the Conditions of Contract called the "**Letter of Acceptance**") shall name the sum which the Employer will pay the Contractor in consideration of the execution and completion of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called the "**Contract Price**").
- 34.2 The notification of award will constitute the formation of a Contract, until the Contract has been affected pursuant to Clause



- 34.3 Upon the furnishing by the successful Bidder of Performance Security or upon signing of the Contract Agreement, whichever is earlier, the Employer shall notify the other Bidders of the results of the bidding and shall publish a notification of award on the Employer's website.

35 Signing of Contract

- 35.1 At the time of notification of award, the Employer will send the successful Bidder the Contract form provided in the bidding documents, incorporating all agreements between the parties.
- 35.2 The successful Bidder shall be invited for Contract signing at the venue and date specified in the Letter of Acceptance.

36 Performance Security

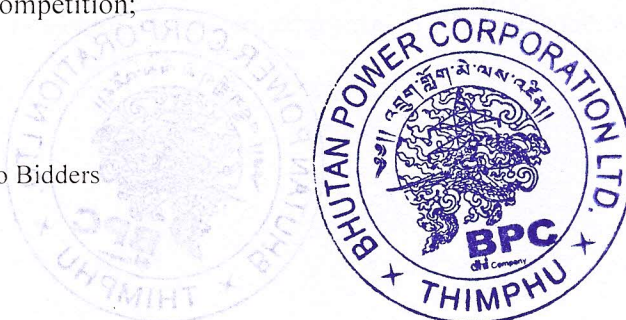
- 36.1 Within ten (10) days of the receipt of the notification of award from the Employer, the successful Bidder shall furnish the Performance Security in an amount of ten percent (10%) of the Contract Price, in accordance with the Conditions of Contract, in the Performance Security Form provided in the bidding documents or another forms acceptable to the Employer.
- 36.2 Failure of the successful Bidder to comply with the requirements of Clause 35 or 36.1 above shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

37 Corrupt or Fraudulent Practices

- 37.1 The BPC requires that bidders observe the highest standard of ethics during execution of contracts. In pursuance of this policy, the BPC:

(a) defines the terms set forth below as follows:

- (i) "corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them, or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement processes or in contract execution; and
- (ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a Contract to the detriment of the BPC, and includes collusive practice among Bidders (prior to or after bid submission or in Contract execution) designed to establish by bid prices at artificial non-competitive levels and to deprive the BPC of the benefits of free and open competition;



- (i) “coercive practice” means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (ii) “Collusive practice” means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party.
- (v) “ Obstructive practice is
 - (i) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation of making false statements to investigators in order to materially impede any investigation into allegations of corrupt, fraudulent, coercive or collusion practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or pursuing the investigation; or
 - (ii) acts intended to materially impede the exercise of the inspection and audit rights of the Employer or organization or person appointed by the Employer and/or relevant RGoB agency.
- (b) will reject a proposal for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the contract; and

Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing.

38 Labour

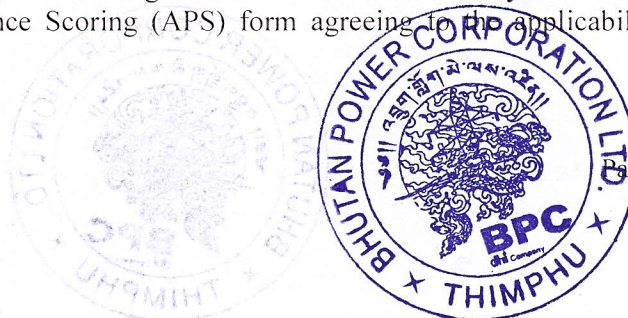
- 38.1 The Bidder shall commit that no child labour shall be engaged in the construction works.

39 Equal Pay

- 39.1 The men and women shall be paid equal for work of equal value.

40 Contractor Information Network (CiNet)

- 40.1 The performance of the Contractor shall be assessed as per the guidelines (average performance scoring form) contained in the CiNET available in CDB website.
- 40.2 The average performance scoring (APS) form is provided in the Section VII (Sample Forms) of the bidding document. The Bidder may initial all pages of Average Performance Scoring (APS) form agreeing to the applicability of APS form.



SECTION III

CONDITIONS OF

CONTRACT

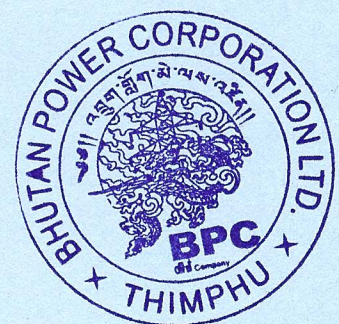


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SECTION III

CONDITIONS OF CONTRACT

ARTICLE I GENERAL PROVISIONS

A. Definitions

The following words shall be construed in accordance with the meanings assigned to them, except when a different meaning is clearly intended:

- (a) **Contract** - The signed Agreement entered into between the Employer and the Contractor and is deemed to include the following:
 - 1) Invitation for Bids;
 - 2) Instructions to Bidders;
 - 3) Letter of Acceptance;
 - 4) Conditions of Contract;
 - 5) Technical Specifications and Drawings;
 - 6) Price Schedules and Sample Bill of Quantities;
 - 7) Bid Form;
 - 8) Schedule of Supplementary Information; and
 - 9) Such further documents as may be expressly incorporated in the Letter of Acceptance.
- (b) **Employer** - The party who employs the Contractor to carry out the works or his duly authorized representative who can act on his behalf in supervising the implementation of the Contract.
- (c) **Engineer** - Same as Employer.
- (d) **Contractor** - The party (a person or corporate body) who is employed by the Employer to carry out the works.
- (e) **Parties** - Refer to both Employer and Contractor.
- (f) **Works** - What the Employer requires the Contractor to do under the Contract, which may involve the use of labour, process technology, equipment, materials and suppliers.
- (g) **Plant** - Means machinery, apparatus, or instrument intended to form part of the works.
- (h) **Specifications** - Means the specifications of the works included in the Contract and any modification or addition made or approved by the Employer.
- (i) **Contract Price** - means the sum stated in the Letter of Acceptance.



- (j) **Priced Bill of Quantities** - The quantities of works to be done together with their corresponding unit prices. Includes also the kind of labour to be employed and their day/hour rates.
- (k) **Drawings** - Include drawings, calculation, samples, patterns, models, manuals and other technical information provided by the Employer to the Contractor under the Contract for the execution of the Works.
- (l) **Unit Rate** - The price for a given measurement of Works or materials or labour used in the Works.
- (m) **Sub-Contractor** - Is a person or corporate body who has a Contract with the Contractor to carry out a part of the Work under the Contract.
- (n) **Commencement Date** - The date indicated in the Notice to Proceed as the date for commencement of Work.
- (o) **Completion Date** - Is the date stated in the Taking-Over Certificate that the Works were substantially completed on this date in accordance with the Contract as per Clause No. 11 under Article III of condition of contract.
- (p) **Taking-Over Certificate** - Is the certificate issued by the Employer in accordance with the provisions of the Clause 50 under Article V of condition of contract, when the whole of the Works was completed.
- (q) **Variation Order** - An order issued by the Employer which involves changing any aspect of the Works.
- (r) **Defect** - Any part of the Works not executed and completed in accordance with the provisions of the Contract.
- (s) **Site** - Means the places provided by the Employer where the Works are to be executed and any other places as may be specifically designated in the Contract as forming part of the site.

B. Language and Enforcement of Contract

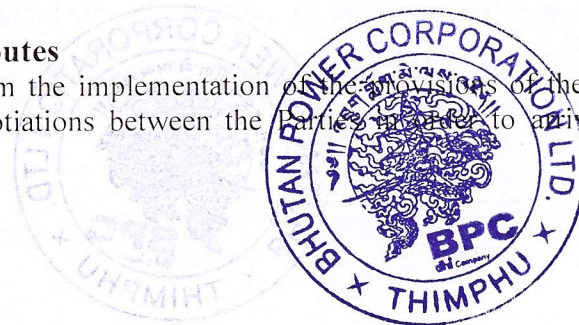
The Contract is executed in English language. Enforcement of the Contract will be in accordance with Bhutan laws and any dispute not settled by arbitration shall be brought to a Bhutan court having jurisdiction thereof.

C. Amendments

The Contract shall be amended only by written agreement between the Parties, except in such cases where the Employer may, under the provisions of the Contract, issue written instructions which shall be accepted by the Contractor

D. Settlement of Disputes

Disputes arising from the implementation of the provisions of the contract shall be settled first by negotiations between the Parties in order to arrive at an amicable



settlement. If negotiations fail, the matter will be settled by arbitration, whereby each of the parties will be entitled to appoint one arbitrator, and a third one to be appointed by mutual agreement to the parties. If either the Employer or Contractor fails to appoint a representative or if both of them cannot agree on the appointment of a third member within 30 days from the date of agreement to refer the matter for arbitration, then the case will be referred to the concerned Dzongkhag Court for adjudication.

ARTICLE II EMPLOYER'S AND CONTRACTOR'S OBLIGATIONS

E. Employer's General Obligations

1. Payment of the Contract Price

The Employer shall pay the Contractor the Contract Price in Bhutanese Ngultrum as stipulated in the Contract. Payment(s) shall be made in accordance with the terms of payment and it is the Employer's obligation to ensure that funds are released on time and are made available as needed. The Employer must also ensure that issuance of certifications, authorizations, or pre-audit procedures are not unnecessarily delayed and that no undue inconvenience is suffered by the Contractor in obtaining payments.

2. Measures for Commencement of Works

The Employer shall take all the steps necessary to enable the Contractor to commence work in accordance with the commencement date. These include giving the Contractor possession of the site of work and access thereto, acquisition of right-of-way if needed, provision of data on hydrological and sub-surface conditions, drawings and specifications, supply of equipment, materials or supplies if to be provided by the Employer, and appointment of the Employer's representative who will act as the Engineer on behalf of the Employer.

3. Approvals, Authorizations

The Employer shall not unnecessarily withhold or delay giving any approval, authorization, instructions or notices as may be required by him under the provisions of the Contract. Any issue, problem, or matter submitted to him for consideration or decision must be addressed promptly and decisively.

F. Contractor's General Obligations

4. Execution of the Works

The Contractor shall execute and complete the Works and remedy any defects therein to the satisfaction of the Employer in accordance with the provisions of the Contract. He shall provide all the technical expertise, labour, materials, machinery and equipment, plant and temporary facilities necessary for the execution and completion of the Works in accordance with the drawings, specifications, and instructions provided by the Employer under the terms of the Contract.

The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the Works and remedy any defects therein in



accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, materials, Plant, Contractor's Equipments and all other things, whether of a temporary or permanent nature, required in and for such design, execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract.

The Contractor shall give prompt notice to the Engineer, with a copy to the Employer, of any error, omission, fault or other defect in the design of or executing the work.

5. Early Warning

The Contractor shall warn the Employer at the earliest opportunity of specific likely future events or circumstances which may adversely affect the quality of the works, increase the Contract Price or delay the Intended Completion Date. The Employer may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Intended Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.

The Contractor shall cooperate with the Employer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the Works and in carrying out any resulting instruction of the Employer.

6. Performance Security

On issuance of the Letter of Acceptance, the Contractor shall submit a performance security in favour of the Employer in the amount equivalent to **Ten percent (10%) of the Contract Price** to guarantee the faithful compliance of the Contractor's obligations under the Contract at the time of signing of the Contract Agreement. The Contractor shall provide such security in the form of a Bank Guarantee or irrevocable letter of credit acceptable to the Employer, issued by a bank in Bhutan. **The performance security shall be valid until the date of issue of the Taking-Over Certificate.** The cost of complying with the requirements of this clause shall be borne by the Contractor.

7. Compliance with Laws, Rules and Regulations

The Contractor shall, in the execution of the works, comply with all existing applicable laws, rules and regulations, and shall obtain the necessary permits, pay the required fees and taxes, and indemnify the Employer against any claim or liability arising from the violation of any law, rule or regulation.

8. Representation against Material Favours

The Contractor declares that it has not given, nor promised to give; any money, gift or material favour or consideration to any government official, Employee or any other Bidder to secure the Contract and that contrary action shall be sufficient ground for revocation or cancellation of the Contract.



9. Taxation

The prices bid by the Contractor shall include all customs duties, import duties, business taxes, income and other taxes that may be levied in accordance to the laws and regulations. Nothing in the Contract shall relieve the Contractor from his responsibility to pay any tax that may be levied by the Government.

ARTICLE III CONDITIONS FOR EXECUTION OF THE WORKS

10. Commencement Date

The Employer shall issue a Notice to Proceed, which will be the basis for commencement of work by the Contractor. The Contractor should start work not later than the date indicated in the Notice to Proceed. For justifiable reasons, the Employer and Contractor may subsequently agree on another commencement date.

11. Time for Completion

The Employer shall issue notice to proceed, which shall be the basis for commencement of work by the Contractor. The Contractor should start work not later than the date indicated in the notice to proceed. The Contractor shall begin the Works on the start date and shall perform and complete the Works in accordance with the program submitted by him, as updated with the approval of the Employer, by the intended completion date as below:

Sl.No	Dzongkhags	Package Name	Duration (month)
1	Thimphu	N6-PW	2.5

12. Extension of Time for Completion

An extension of the time for completion may be allowed by the Employer for the following reasons:

- additional work has to be done,
- adverse climate conditions or other natural calamities have caused work stoppages,
- delay or impediment on the part of the Employer, and
- there are unusual circumstances that have occurred which are not directly attributable to the Contractor.
- the delay caused by force majeure, including but not limited to war, riot, civil insurrection, strike or lockout by persons other than the contractor's personnel, fire, floods, epidemics, earthquakes, quarantine restrictions and freight embargoes, such delay may be excused and the period of such delay may be added to the time of performance of obligation delayed.



The Contractor must give notice of any event causing a delay within twenty one (21) days of such occurrence and the Employer must within reasonable time decide on the extended date for completion. The Contractor shall extend the period of validity of the Performance Security accordingly.

13. Sub-Contracting of the Work

The Contractor shall not sub-contract the work or any part of the work under any circumstances. Sub-contracting of works shall lead to termination of the Contract and will lead to the forfeiture of performance security deposit.

14. Work Program

The Contractor shall prepare the Work Program for the execution of the works, if advisable, with the use of spread sheet or any other networks or equivalent. One original and two copies of such diagram must be provided to the Employer not later than twenty one (21) days after the commencement date. The work must cover all the activities for which the Contractor is responsible and must ensure that the resource required for the execution of each activity are or will be available and taken into account in setting activity duration.

15. Transportation of Materials

Materials required for the execution of the Contract are to be transported to the work sites for all packages by the Contractor at his own arrangements from the locations as indicated below. For details, the Bidder may contact the persons indicated under Clause 3.3 of Instructions to Bidders of the bidding documents.

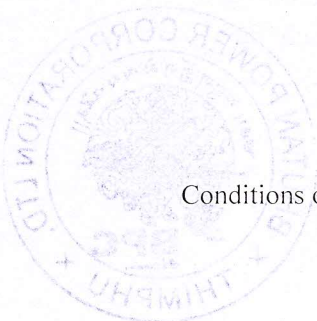
Sl.No	Dzongkhags	Package Name	Store location
1	Thimphu	N6-PW	ESD Store Thimphu

The Contractor shall transport the materials to the work sites in such a manner that materials required at the earliest will be first transported.

16. Insurance

The Contractor shall obtain the following insurance coverage in such forms and amount as may be considered sufficient for the risk or liability insured against, and must be in force until the Taking-Over Certificate of the works is issued:

- (a) for the works (including plants and materials incorporated therein) and Contractor's equipment against loss or damage;
- (b) against liability for accidental death or injury of any person, or loss or damage to any property arising out of the performance under the Contract. The loss or damage of any material arising out of the performance under the Contract shall be made good;



- (c) against liability arising from accident suffered by the Contractor's workers while performing their work in accordance with Government rules and regulations; and
- (d) the Contractor shall avail full road accident insurance of goods during transportation from stores to work sites. The insurance policy should protect the goods during the vehicle accident viz. vehicle off road, head on collision, etc.

The Contractor shall assume full responsibility for the care and protection of the works, materials and plants from the commencement date to the date of acceptance of the whole of the Works, or of any section thereof incase of partial completion. Any loss or damage of the works occurring during this period shall be from the Contractor's account. However, if the loss or damage is caused by Force Majeure, including war, civil insurrection, fires, floods, epidemics and earthquakes, the cost of restitution therefore may be considered as an addition to the Contract Price to the extent that it is not recoverable from the proceeds of any insurance coverage.

17. Contractor's Superintendence

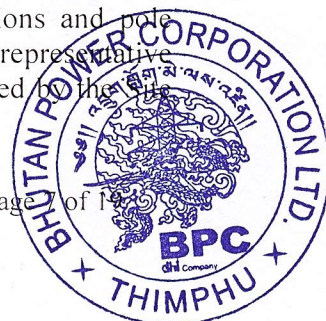
The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or a competent authorized representative approved of by the Engineer, which approval may at any time be withdrawn, shall give his whole time to the superintendence of the Works. Such authorized representative shall receive, on behalf of the Contractor, instructions from the Engineer. If approval of the representative is withdrawn by the Engineer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned, after receiving notice of such withdrawal, remove the representative from the Works and shall not hereafter employ him again on the Works in any capacity and shall replace him by another representative approved by the Engineer.

18. Engineer at Liberty to Object

The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the Works any person provided by the Contractor who, in the opinion of the Engineer, misconducts himself, or is incompetent or negligent in the proper performance of his duties, or whose presence on Site is otherwise considered by the Engineer to be undesirable, and such person shall not be again allowed upon the Works without the consent of the Engineer. Any person so removed from the Works shall be replaced as soon as possible.

19. Setting Out

The Contractor shall be responsible for setting out the works and for ensuring the correctness of the positions, levels, dimensions and alignment of the works. The route alignment, identification of locations for the construction of substations and pole fixing will be conducted by the Contractor in the presence of the representative Engineer from the Employer. All the above settings have to be approved by the



Engineer of the Employer prior to the commencement of works. All the measurements will be taken by the Site Engineer only for the works approved by the Employer. At any time during the execution of the works, the Contractor shall correct any error at his own expense when required to do so by the Employer. Boreholes, exploratory excavations or soil testing may be done if instructed by the Employer. In case, costs of boreholes or explanatory excavations or soil testing are not included in the Contract Price, the cost shall be borne by the Employer.

20. Safety of Operations and Protection of Environment

The Contractor shall assume full responsibility and comply with all applicable safety regulations for the adequacy and safety of site operations and methods of construction, and he shall adopt measures to prevent injuries to persons or damage to properties or utilities. He shall hold the Employer harmless for any liability for loss or damage resulting from his failures to take the necessary precautions. He shall avoid undue interference with private business, public travel, or with the work of other contractors. He shall take steps to protect the environment and to minimize noise, pollution or other undesirable effects from his method of operation.

The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein:

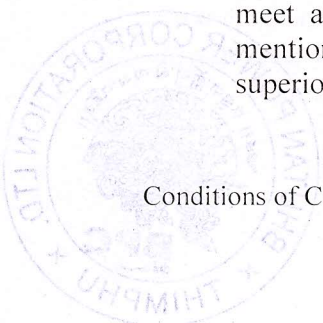
- (a) have full regard for the safety of all persons entitled to be upon the Site and keep the Sites (so far as the same is under his control) in an orderly state appropriate to the avoidance of danger to such persons;
- (b) provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the works or for the safety and convenience of the public or other; and
- (c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or other resulting from pollution, noise or other causes arising as a consequence of his method of operation.

21. Provision of Competent Personnel

The Contractor shall provide adequate qualified technical personnel to supervise the Works and such skilled and semi-skilled labour as necessary to complete the Works within the time specified. He shall, subject to the approval of the Employer, appoint a competent authorized representative who will act on his behalf in receiving instructions from the Employer and in supervising the execution of the works.

22. Compliance with Standards

The Contractor shall ensure that the quality of the materials, plants and workmanship meet all standards as specified in the Contract. Whenever a specific standard is mentioned in the specifications, it is intended only as a reference and equivalent or superior standards are equally acceptable, subject to prior approval of the Employer.



The execution procedure should be strictly adhered as specified in Section-IV, Technical Specification.

23. Responsibility to Rectify Loss or Damage

If any loss or damage happens to the Works, or any part thereof, materials or Plant for incorporation therein, during the period for which the Contractor is responsible for the care thereof, from any cause whatsoever, the Contractor shall, at his own cost, rectify such loss or damage so that the Permanent Works conform in every respect with the provisions of the Contract to the satisfaction of the Employer. The Contractor shall also be liable for any loss or damage to the Works occasioned by him in the course of any operations carried out by him for the purpose of complying with his obligations.

24. Examination of Work

The Employer shall have the right to conduct whatever tests or inspections it may consider necessary to determine whether or not the work is being executed in accordance with the provisions of the Contract. Such right may include testing of samples of materials used in the works, examination of the quality of the workmanship and conformity of the works to drawings and specifications.

The Contractor shall provide such facilities, apparatus and instruments, sample of materials, manpower and other forms of assistance that are needed in conducting the tests or inspections. Tests may be done in the workshops or at the site of operations and the date and time for carrying them out should be agreed upon between the Employer and the Contractor.

If the Employer determines, after inspections, that materials used or the work done are defective in any respects, he may reject the said materials or Works and demand that the Contractor rectifies the defects by replacing the materials or by re-executing the works. If the Contractor fails within a reasonable period of time to such action as instructed by the Employer, the Employer shall have the right to employ other persons to carry out the same and the cost shall be borne by the Contractor.

25. Monitoring of Work Progress

At such time as will be agreed upon between the Employer and the Contractor, a periodic review meeting of the progress made will be undertaken. Based on the actual progress achieved, if necessary, an up-date of the work program for the execution of the remaining works will be prepared by the Contractor taking into account the effect of variations and additional works to be undertaken. Failure to submit an updated work Program will entitle the Employer to withhold payment of the next amount due as progress payment.

If delay is being encountered in the execution of the Works as determined against the approved Work program, the Employer and the Contractor shall, after examining the causes of the delay, agree on appropriate measures to be taken in order to make up the delay and to avoid further work slippages.



The Employer's acceptance of any revised Work Program shall not relieve the Contractor of his obligations under the Contract.

26. Variation Orders

The Employer may, at any time during the progress of the Works, make variations in the form, quality or quantity of the works. Such variations may consist of the following:

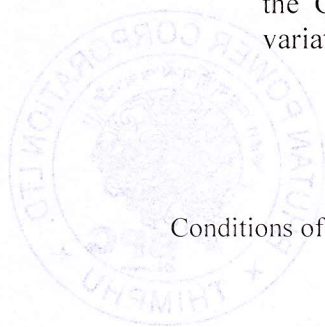
- (a) Increase or decrease in the quantity of work to be done as indicated in the Contract;
- (b) Omission or insertion of any item of work;
- (c) Change in the level, lines, positions and dimensions of any part of the works;
- (d) Change in the character, quality, or kind of any work;
- (e) Additional work of any kind; and
- (f) Change in the sequence or timing of construction activities.

The Employer can order a variation by issuing a written instruction to the Contractor. A variation made shall not, in any way, vitiate or invalidate the Contract.

All variations, except under item (a) above, shall be valued at the rate and prices set out in the Contract ("Bill of Quantities"). If the Contract does not contain any rate(s) applicable to the variations, suitable rates or prices will be agreed upon between the Employer and the Contractor. In the event of disagreement between the parties, the Employer shall fix the rates as may consider fair and appropriate and shall notify the contractor.

The Contractor shall not make any such variation without an instruction of the Engineer.

For variations under item (a) increase or decrease in the quantities of work, variations shall be valued at the rates and prices set out in the Contract, if the variation in quantity is within the limit of (20%) for each item of work. If the final quantity of the work executed varies from the quantity in the Bill of Quantities of the Contract for that item by more than 20%, and the value of this variation exceeds one percent (1%) of the original Contract Prices stated in the Letter of Acceptance, the excess quantity over the limit shall be paid to the Contractor at a suitable rate or price agreed upon between the Employer and the Contractor. In the event of disagreement between the parties, the Employer shall fix the rates and prices as may be considered fair and appropriate and shall notify the Contractor. If the value of this variation is less than one percent (1%) of the original Contract Price, the excess quantity shall be paid to the Contractor at the unit rate or price set out in the Contract. The value of all variations shall be taken into account in determining the final Contract Price.



Note:

It may however, be noted that even in the event of any variation beyond this limit, payments shall be made strictly based on the actual volume of work executed and at the same rate or price set out in the Contract.

27. Instructions for Variations

The Contractor shall not make any such variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantity.

28. Measurement of works

The quantities set out in the Bill of Quantities should be considered as estimates and may not necessarily be the actual and correct quantities of work to be performed under the Contract.

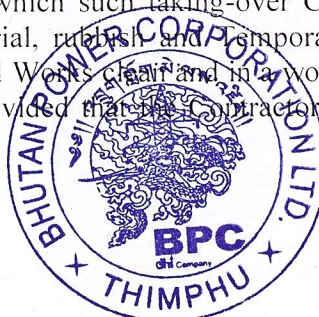
The Contractor shall be responsible for the measurements of Works and the preparation of its bills. The measurement of works shall be carried out jointly by the Employer's representative and the Contractor. The Employer's Representative shall record the measurements in the measurement book in accordance with the Financial Manual. The record entered in the measurement book shall be signed by the Employer's representative and countersigned by the Contractor. The works shall be measured net except otherwise provided for in the specifications.

No part of the Works shall be covered up or put out of view without the approval of the Employer's representatives and the Contractor afford full opportunity for the Employer's representative to examine and measure any such part of the works which is about to be covered up or out of view. The Contractor shall give due notice examination and measurement. The Employer's representative shall, without unnecessary delay, arrange for examining and measuring such part of the works, unless he considers it unnecessary and advises the Contractor accordingly.

29. Guarantee of Works after Completion Date

The Contractor guarantees that the work performed, and the materials and equipment furnished shall be free from defects, that they comply with the prescribed specification and that they passed the required performance tests. This guarantee shall be for a period of twelve (12) months after the Completion of the whole Works known as defects liability period and within that period, the Contractor commits itself to repair or replace, promptly and without charge, any work, equipment and materials or part thereof which fail to meet the aforementioned guarantee.

Upon the issue of any Taking-Over Certificate, the Contractor shall clear away and remove from that part of the Site to which such taking-over Certificate relates all Contractor's Equipment, surplus material, rubbish and temporary Works of every kind, and leave such part of the Site and Works clear and in a workmanlike condition to the satisfaction of the Engineer. Provided that the Contractor shall be entitled to



retain on Site, until the end of the Defects Liability Period, such materials, Contractor's Equipment and Temporary Works as are required by him for the purpose of fulfilling his obligations during the Defects Liability Period.

30. Indemnity for Infringement of Property Rights

The Contractor shall indemnify the Employer for any claim, cost or liability on account of any infringement of any patent, trademark, trade name or any protected right in respect of equipment, materials or plants used in the Works except where such infringement results from compliance with the design or specifications provided by the Employer.

31. Storage of Plant and Materials

The Contractor shall provide adequate and safe facilities for storing Plant and materials that will be used in the execution of the works. They must be neatly piled and compactly stored in the places that provide clear access to the site and without causing any inconvenience or create any danger to the public.

Excavated materials, wreckage and waste products, shall be disposed off quickly so as not to cause unnecessary obstruction or create sanitation/environmental problems.

The loading of materials to their trucks will also be arranged by the Contractor and will comply with the instruction issued by the Stores Officer of the Employer.

If there is any balance materials left after the completion of the works which is supplied by the Employer under the Contract, the Contractor will hand over the same to the respective Electricity Services Division, as indicated by the Employer. The Contractor should meet all associated cost to this effect and the Employer shall not be responsible for any cost involved.

If the Contractor fails to return the balance materials in full set of each item, the Contractor shall pay Employer's purchasing cost of the items plus 50% on the purchasing cost to the Employer. Final bills shall be released only after return of all balance materials.

Any excess materials returned by the Contractor will not be taken by the Employer and paid for. And, if the Contractor is not able to return the balance materials within fifteen (15) days after physical completion of the works successfully, the Employer shall collect the balance materials at the cost and risk of the Contractor before releasing the final payment to the Contractor. However, the balance materials collected by the Employer in incomplete set shall be construed as lost or unreturned whereby its associated cost shall be deducted from any money payable to the Contractor.

32. Facilities for Other Contractors

The Contractor shall, upon the instructions of the Employer, provide other Contractors and workmen employed by the Employer, reasonable opportunity for carrying out the works and if required, to make available the use of roads, equipment and labour subject to additional compensation as may be determined by the Employer.



33. Unforeseen Obstacles

If during the execution of the works, the Contractor encounters physical obstructions or adverse geological or hydrological conditions on the site that could not have been reasonably foreseen, he shall give notice to the Employer, and both the Contractor and the Employer will determine:

- (a) to what extent and extension of time will be necessary, and
- (b) the amount of additional costs which have been incurred by reason of such obstructions or conditions and how, and by whom the cost will be born.

34. Discoveries

Anything of historical or other interest or of significant value discovered on the site shall be the property of the Employer. The Contractor shall notify the Employer of such discoveries and carry out in accordance with the instructions of the Employer for dealing with such discoveries.

35. Outbreak of Hostilities

If during the period when the Contract is in force, which may be before or during the execution of the works, there is an outbreak of hostilities between the armed opposite forces, which may impede or render impossible the commencement, continuance or completion of works, then the parties shall agree between themselves as to what steps will be taken under the circumstances, including a deferment or temporary suspension of the works or even termination of the Contract. However, the Contractor shall, until the decision has been reached, endeavour to start or complete the execution of the works to the best of his ability in close consultation with the Employer.

In case of termination by reason of outbreak of hostilities, the Employer shall pay the Contractor whatever amounts are due for Work already performed and for such other expenditures which the Contractor has incurred in accordance with the provisions of the Contract.

36. Suspension of work

The Employer may suspend the execution of the Works or any part thereof and the Contractor shall, during such suspension, protect the Works against loss or damage due to adverse external conditions. If the suspension is not due to default or breach of Contract on the part of the Contractor, an extension of time for the completion of works will be allowed, as may be determined by the Employer. The Employer and the Contractor may also agree on the amount to be added to the Contract Price by reason of such suspension.

Should the suspension which is not caused by the default of the Contractor last for more than forty five (45) days, the Contractor may request thereafter permission to continue with the works giving his reasons thereof. If permission is not granted without justifiable reason within twenty one (21) days after permission has been



requested, such denial may be treated as Employer's default and the Contractor shall be entitled to terminate his employment under the Contract.

The Contractor shall be entitled to suspend the execution of the works if the Employer fails or refuses to pay the Contractor any amount due under the Contract within sixty (60) days after the amount becomes due and payable, after prior presentation of notice for Payment. Should the Employer pay subsequently after such suspension or reduction of Work, the Contractor shall resume normal work as soon as is reasonably possible.

37. Liquidated Damages

If the Contractor fails to complete the whole of the works, or any part thereof within the time agreed upon for completion, the Employer shall have the right to collect from the Contractor liquidated damages equivalent to **0.1 percent of the Contract Price for every Day of delay**. However, the total amount of liquidated damages shall not exceed ten percent (10%) of the **Contract Price**.

38. Termination of Contract by Employer

The Employer may terminate the Contract upon thirty (30) days notice to Contractor if the other party causes a fundamental breach of Contract. Fundamental breaches of Contract shall include, but not be limited to, the following:

- (a) Contractor has stopped working continuously for ten (10) days and in spite of repeated (three times) notice by Employer to start the work.
- (b) In the opinion of the Employer, in spite of repeated notice, Contractor was not able to deploy sufficient manpower at site to execute the Contract and may not be in position to complete the work as per schedule.
- (c) Continuance of the work has become impossible, or will work adversely against the Employer's interest.
- (d) The Contractor has become insolvent or financially incapable of completing the works or has assigned his assets for the benefit of his creditors.
- (e) The Contractor has violated certain important provisions to the Contract, such as Sub-Contracting of the works, failure to comply technical specifications, poor workmanship, unreasonable delay etc., and has failed to take compensatory measures.

39. Termination of Contract by Contractor

The Contractor may terminate the Contract upon thirty (30) days notice to the Employer where;



- (a) The works have been suspended by the Employer for sixty (60) days and no permission to resume work has been granted; and
- (b) The Employer has failed to pay any substantial sums due to the Contractor under the terms of the Contract within the time specified for payment.

40. Take Over of the Works by the Employer

In case of termination under Clause 38 above, the Employer will take possession of the works, materials, tools & equipment which have been provided in connection with the Works, and may continue and complete the works by whatever manner or method it deems best including the employment of another Contractor. The cost of completing the same shall be deducted from whatever monies are due to the Contractor had the Contract not been terminated. If the amount due to the Contractor is less than the residual cost of completion, the Contractor shall pay the difference; if the residual cost is less, the Contractor shall have no claim to the excess, except for payment for rentals for the use of the Contractor's cost of protecting and securing the Works, and less all payments received by the Contractor up to the date of the Certificate.

41. Corrupt or Fraudulent Practices:

If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for or in executing the Contract, then the Employer may, after giving fourteen (14) days' notice to the Contractor terminate the Contractor's employment under the Contract and expel him from the site, and the Contractor shall stop the work immediately, make the site safe and secure, and leave the Site as soon as reasonably possible.

For the purpose of this Clause:

- (a) "Corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- (b) "fraudulent practice" is an act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit to avoid an obligation;
- (c) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;
- (d) "coercive practice" is impairing or harming, or threatening to impair to harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (e) "Obstructive practice is
 - (i) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation, or making false statements to investigators



in order to materially impede any investigation into allegations of corrupt, fraudulent, coercive or collusion practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or pursuing the investigation; or

- (ii) acts intended to materially impede the exercise of the inspection and audit rights of the Employer or organization or person appointed by the Employer and/or relevant RGoB agency.

42. Payment upon Termination

If the Contract is terminated because of a fundamental breach of Contract by the Contractor and/or due to violation of any of the provisions under the Integrity Pact by the Contractor, the Employer shall issue a certificate for the value of work done less advance payments received up to the date of the issue of the certificate and less twenty percent (20%) of the value of work not completed. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable by the Contractor to the Employer.

If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Employer shall issue a certificate for the value of the work done, materials ordered, less advance payments received up to the date of the certificate.

43. Termination without Prejudice to Other Rights

The right of either the Employer or the Contractor to terminate the Contract in accordance with the foregoing provision is without prejudice to any actions, or remedies which either party may take under the provisions of the Contract.

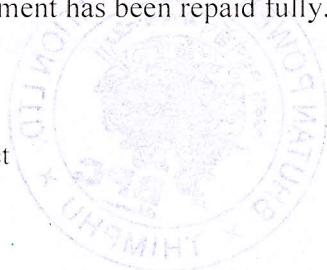
ARTICLE IV PAYMENT PROVISIONS

44. Cash Flow Estimates

The Contractor shall submit a quarterly cash flow estimate indicating the amount of quarterly payments expected to be made under the Contract based on the approved Work Program.

45. Advance Payment

The Contractor shall be eligible for advance payment of ten percent (10%) of the Contract Price excluding provisional sum and contingency, which can only be used to pay for equipment and other mobilization expenses required to start the works. The advance payment will be made only upon submission to the Employer of an unconditional bank guarantee in a form and by a bank acceptable to the Employer in amount equal to the advance payment. Such guarantee shall remain effective until the advance payment has been repaid fully.



The advance payment shall be repaid by the Contractor through percentage deduction from the interim progress payments and that the advance payment shall be fully repaid prior to the time when eighty percent (80%) of the Contract Price has been certified for interim progress payment. The amount of the bank guarantee may proportionately be reduced with every repayment made by the Contractor.

46. Retention Money

From each amount due for payment, the Employer will deduct ten percent (10%) thereof as Retention Money. Such deductions will be made until the completion of the Works and shall serve as a guarantee that any defects discovered during the Defects Liability Period will be corrected. Upon the expiration of the Defects Liability Period, the remaining balance to the retention money will be returned to the Contractor.

The Employer and the Contractor may agree that after the completion of the Works but during the warranty period, the Retention Money or part thereof will be returned to the Contractor and in lieu thereof, a bank guarantee may be put up by the Contractor.

47. Additional Claims

Should the Contractor have any additional claims for payment pursuant to any provision of the Contract, he shall advise the Employer about such claims, and submit to the Employer full details thereof including the basis of the claims. The Contractor shall permit the Employer to examine all records relevant to the claims.

Within thirty (30) days after receipt of the claims, the Employer shall establish the veracity and propriety of the claim and shall communicate to the Contractor his decision. The Employer may decide to pay the full amount claimed, or may opt to pay just part thereof, to the extent of what has been substantiated by the evidence submitted by the Contractor. In case of disagreement, an arbitrator(s) may be appointed by the parties to resolve any difference between them.

48. Price Adjustment

The rates and prices in the Bill of Quantities are fixed for the duration of the Contract. Hence, no price adjustment shall be applicable under the Contract.

49. Terms of Payments

All payments under the Contract shall be made in local currency (Bhutanese Ngultrum). The Contractor shall submit monthly bills/invoices for completed works. The bills/invoices must be supported by joint measurement duly signed by the Engineer of the Employer. Based on these measurements, the Employer shall then review and verify the bills/invoices submitted by the Contractor and determine how much is actually payable to the Contractor after necessary deductions. The Employer may make any correction or modification in any previous payments which has been approved by him.



The final payment by the Employer to the Contractor in respect of the whole Works under the Contract shall be made as per Clause 51 under Article V.

Payment shall be made by the Employer within sixty (60) days from receipt of statement, unless delay is encountered in the submission of supporting documents if required by the Employer.

Where the Contract provides for partial take-over, the above payment terms apply for each of such partial works/packages independently.

ARTICLE V COMPLETION OF THE WORKS

50. Taking-Over Certificate

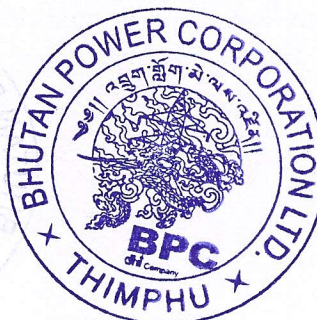
When whole of the works have been substantially completed and satisfactorily pass any tests on completion prescribed by the Contract, the Contractor may give a notice to this effect to the Employer, accompanied by a written undertaking to finish with due expedition any minor outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the Contractor for the Employer to issue a Taking-Over Certificate in respect of the work. **The Employer shall issue a Taking-Over Certificate, stating the date on which the works were completed in accordance with the Contract, give instructions in writing to the Contractor specifying all the work, including any defects in the Works affecting completion, and completion of return of all balance materials to the Employer, which is required to be done before the issue of such certificate.** The Contractor shall be entitled to receive such Taking-Over Certificate within 21 days of satisfactory completion of the works so specified and remedying any defects so notified.

51. Statement of Completion

After the issue of the Taking-Over Certificate in respect of the whole works and when the minor outstanding works have been completed including the final clean-up of the Site has been performed, the Contractor shall submit the Employer a Statement of Completion which shall show in detail:

- (a) The final value of the work done in accordance with the Contract, including variations.
- (b) Any further sums that are due to the Contractor and remain unpaid.

Upon receipt of such statement, the Employer shall conduct a final inspection of the Works, measure the works and within fifteen (15) days from receipt of the statement of completion prepare a final estimate and present the same to the Contractor for his concurrence. This statement, if approved by both parties, is the final statement and the total amount of the final statement represent full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract.



52. Contractor's Liability

Neither the final inspection nor the preparation of the final statement by the Employer, nor the issuance of the Taking-Over Certificate to the Contractor, nor the payment of the amount due, nor the possession by the Employer of the Work, shall operate as a waiver of the provision of the Contract, and the Contractor shall remain liable for a period of twelve (12) months from the date of completion, stated in the Taking-Over Certificate, for any defect or damage arising from any violation or lack of compliance with the covenants and conditions of the Contract.

Any work of reconstruction and correcting of defects must be done within thirty (30) days from receipt of advice of the existence of such defects by the Contractor. The cost of such works shall be for the account of the Contractor if the defect(s) were due to:

- (i) The use of materials, plant or workmanship not in accordance with the Contract;
- (ii) Fault in design for which the Contractor was responsible; and
- (iii) Failure on the part of the Contractor to comply with any obligation under the Contract.

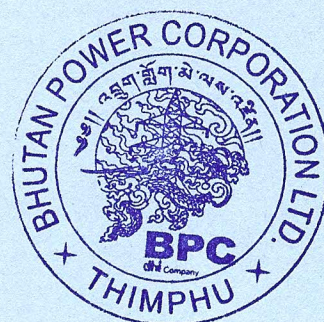
Neither shall the Contractor be released of any unfulfilled obligations including, but not limited to, the payment of taxes due to him, and for unpaid claims for labour, materials and equipment used in the works.

53. Release from Performance

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



SECTION IV
TECHNICAL
SPECIFICATIONS and
DRAWINGS



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CHAPTER 5

CONSTRUCTION STANDARD

5. General

5.1 Choice of Route

The route selected for an overhead line should be the one that will give the lowest cost over the life of the line. Route selection therefore involves consideration of a number of factors, including the cost of landowner compensation, the cost of transporting materials to the site, construction cost and the cost of ongoing maintenance requirements including vegetation control. As a general rule, line routes should be as short as practicable and should run as close to a road as possible since this facilitates access for both construction and maintenance. Consideration should also be given to the location of possible future line extensions, either to supply potential new loads or to service towns and villages that are currently unelectrified. Following parameters should be kept in mind:

- The shortest route practicable.
- As close as possible to the road for easy maintenance and approach during construction.
- Route in direction of possible future load.
- Angle points should be less.

Where possible, distribution line routes should avoid steep hills or valleys, swamps, lakes, thick forests, rivers or other locations where access is difficult or long spans are required. When building along a road, pole positions should not cause a traffic hazard or be in locations where there is a higher probability of vehicle impact.

The following should be avoided wherever possible:

- Areas likely to be used for future urban development;
- Routes incorporating sharp changes in line direction;
- Routes close to aerodromes;
- Religious monuments;
- Special trees of religious significance;
- School playgrounds;
- Cemeteries; and
- Buildings containing explosives.

Construction of lines over private land involves negotiation of a right of way and payment of compensation, and is to be avoided if a cost effective alternative route along public roads is available.

5.2 Approval of Line Routes

Prior to the erection of lines along public roads, the authority responsible for the road should be contacted and approval obtained for the location of all poles, road crossings,



tree cutting or trimming, and guying locations. Where overhead distribution lines are to be constructed in urban areas, it will also be necessary to contact the local Town Planning Authority for approval. Where appropriate, approval should also be obtained from authorities such as the National Environment Commission, Department of Forestry, etc.

Once the line route is finalized, a detailed line survey should be undertaken and the pole locations finalized and marked. Poles should be located well clear of water and other areas of potential land subsidence. Poles for lines that cross agricultural fields should, wherever possible, be located at bunds. Procedure for Obtaining Environmental Clearance for the new project from National Environment Commission Secretariat (NECS) is given below:

- Fill in the project details in environmental clearance application guidelines for power transmission and distribution lines.
- Attached the following relevant statutory Approvals:
 1. Public Clearance from the affected parties if the tower/poles falls in Private Registered land.
 2. Gewog Approval from the concerned Gewog
 3. Forestry Clearance
 4. Dzongkhag Approval
 5. GPS Data / the google earth map of the project.
 6. Site Visit report from the Dzongkhag Environment committee (DEC).
- Submit the duly filled environmental clearance application with the aforementioned attachments to NECS for Environmental Clearance for the project through EDCCD.

5.3 Substation Earthing

Particular care should be given to the construction of the earthing system as proper earthing of distribution transformer substations is necessary to ensure safe operation of the supply system. The earth pits should be located as shown in drawing no. BPC-DDCS-2015-64 and the earth connections to the substation structure are shown in drawing BPC-DDCS-2015-65.

BPC's standard earthing conductor for transformer substations is 25x6mm galvanized iron strap. Three electrodes are used forming an equilateral triangle with minimum distance of 6500 mm, so that adequate earth buffer is available. Each Electrode shall be a GI pipe of 4mm thick, 40mm outer dia and 2500mm long and buried vertically so as to leave about 4 inch pipe length above ground level to fix a 250x250mm G.I plate. The three earth electrodes should be connected together by an equipotential earthing ring embedded at least 100 mm below ground level. These are connected as follows:

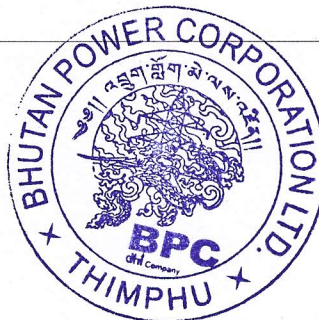
- One earth electrode is connected to each lightning arrestor and the transformer tank. It is important that the earthing conductor is kept as short as possible.
- The second earth electrode is connected to the transformer LV neutral bushing, the transformer tank and the crossarms supporting the drop-out fuses.



- There shall be minimum joints preferably no joints enroute to earth electrodes. Where Joints are unavoidable, they shall be brazed, riveted or welded and bolted (and painted with red lead and aluminum paints one after the other and finely coated with bitumen). The maximum permissible earth resistance as per the international standard is 5 ohms, however, due to difficulties to obtaining required value of 5 ohms, 25 ohms is allowable value in BPC. Modern earthing compounds are recommended instead of salt and charcoal to reduce the earth resistance of the substation in extreme situations.

5.4.1 General

- These notes in general cover cables upto and including 33 kV rating.
- Electrical installation work shall comply with all currently applicable statutes, regulations and safety codes in the locality/country where the installation is to be carried out.
- Installation of cables shall be carried out generally as per IS 1255 or relevant applicable IEC standards and enclosed typical drawings.
- Installation of cables shall include unloading, storing, laying, fixing, jointing, termination and all other work necessary for completing the job. Supply of glands and lugs whenever specified, together with necessary materials for jointing and termination shall also be included in Contractor's scope.
- Construction of cable trenches, provision of embedments and similar work involving civil items will be carried out as per the instructions/notes on the respective project drawings and installation specification.
- Cables will be installed in trenches, trays, racks, tunnels, conduits, duct banks or directly buried. The actual cable layouts will be shown on the relevant drawings. Any changes, if necessary, after obtaining prior approval of the Engineer shall be carried out at site by the Contractor and shall be clearly marked by him on drawings.
- Cables to each circuit shall be laid in one continuous length.
- Where cables are to be installed at temperatures below 3 ° C, they shall be heated to about 10 ° C for not less than 24 hours (in a heated building or in a tent with hot air heater) to facilitate laying (otherwise the bending would damage the insulation and protective coverings of cables). The cable laying must be carried out swiftly so as not to allow the cable to cool down too much.



- Instead of cast iron cable route marker, plastic marking tape may be used for UG which shall run along the length of the cable and shall have cable marking at every 1.5meter length.

5.4.2 Outdoor Cable Installation

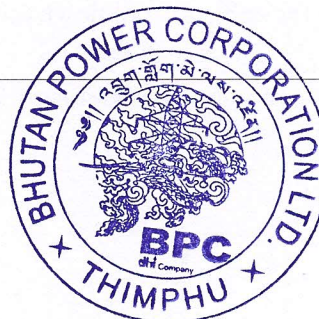
- Directly buried cables shall be laid as per the drawings and cable route markers shall be provided. MS cable marker to be replaced by plastic marker buried cables in trefoil formation shall be bound by plastic tapes or 3mm dia. nylon core every 750 mm.
- Joints in directly buried cables shall be identified by joint markers at each joint location.
- In each outdoor cable run greater than 50 metre, some extra cable length shall be kept at a suitable point to enable a straight through joint to be made should the cable develop fault at a later date.
- Where cables cross roads, water or sewage pipes, the cable shall be laid in hume or steel pipes. For road crossings the pipe for the cable shall be buried at not less than 600 mm unless otherwise noted in the drawings. Hume pipes shall be preferred to steel pipes from the point of view of corrosion.
- Control cables and small power cables in trenches and tunnels shall be run in ladder type cable trays (maximum tray width 600 mm) supported on trench/tunnel carrier arms. The cables shall be laid to tray rungs by means of 3mm dia. nylon cord at an interval of 5000 mm and also at bends.
- For good sealing arrangement at entry points, suitable pipe sleeves, adequate in number and of adequate sizes shall be provided in building walls/slabs for passage of cables into a building from cable trays/racks/cable trenches located outside the buildings.

5.5 Bending Radii for Cables

The bending radii for various types of cables shall not be less than those specified below, unless specifically approved by the Engineer.

Description	Single Core	Multicored Armoured	Multicored Unarmoured
PVC insulated cable upto 11 kV	20 D	12 D	15 D

Where D = Overall diameter of cable.



(For XLPE insulated cables, recommendations of manufacturers to be followed).

The above values may be reduced to 70% when making only one bend such as in case of installing an end termination

5.6 Terminations Clamping & Miscellaneous Details

- Cable entry to motors, push button stations and other electrical devices shall be from the bottom as far as possible or from the sides. Top entry shall be avoided particularly for outdoor equipment.
- Identification tags made from aluminium sheet shall be attached to each end of each cable by means of GI binding wire as shown in drawing. Tags shall be additionally put at an interval of 30 meters on long runs of cables and in pull boxes.
- All cable terminations shall be solderless crimping type. Whenever lugs are required to be supplied, adequate size crimping lugs of approved make shall be used by the Contractor. The crimping tools shall be adequate for the lug sizes.
- Wooden cleats when required for vertically supporting on or more single core cables per phase, such as on vertical framework near transformer cable boxes, shall be made out of well seasoned wood given two coats of fire retarding paint of approved quality.

5.7 Earthing of Cables

- Metallic sheaths, screens and armour of all multi-core cables shall be earthed at both equipment and switchgear end.
- Sheath and armour of single core power cables shall be earthed at switchgear end only. If specifically indicated in drawings, for long lengths of cables multiple earthing may have to be adopted to safeguard against the presence of standing voltage under normal as well as fault conditions.

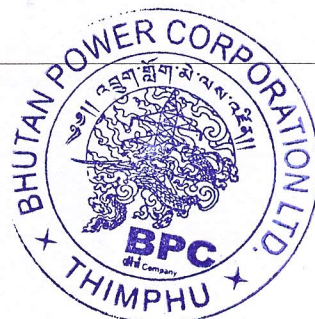
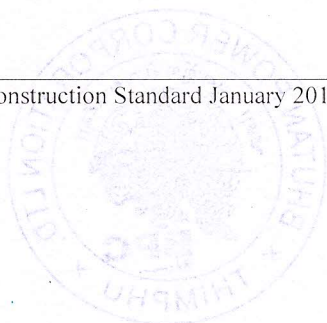
Earthing of CT and PT neutral lead shall be at one end only.

6. TECHNICAL SPECIFICATION (CIVIL)

6.1 General

This specification covers the general requirements with supply of all materials and construction of civil works and fabrication of structural steel works.

The contractor shall perform the works to meet the requirements of this specification, the attached bid drawings and the relevant articles of this Contract Document.



7. Standards & Applicable Codes

All materials, design, fabrication, galvanising and tests under these specifications shall conform to the latest applicable Indian Standards, codes or their equivalent established and approved in the country of manufacturer, and approved as equal by Engineer.

Any details not specifically covered by these standards and specifications shall be subjected to approval by Engineer. In the event of contradictory requirements between the standards and the specifications requirements, the terms of the specifications shall apply.

The Contractor may propose equivalent standards, specifications, materials etc. which shall be equal in every aspect as specified. If the Contractor for any reason proposes equivalents to or deviations from the above standards, he shall state the exact nature of the change or the reason for making the change and shall submit complete specifications of the materials as well as copies of pertinent standards for the approval of Engineer and decision of Engineer in the matter of acceptability will be the final.

8. Materials

All materials shall be as per the specifications and shall be approved by the Engineer before use in the works. Samples of materials, fittings etc. shall be submitted by the contractor for approval of the Engineer before bulk supplies are brought on the site of works. The samples so approved shall be kept in the custody of Engineer till the completion of works. When required by the Engineer, the contractor shall supply for the purpose of testing, samples of any materials proposed to be used in the works.

8.1 Testing of materials

Samples whether submitted to govern bulk supplies or required for testing before use shall be tested and the testing charges, if any, shall be borne by the contractor. Testing of materials like concrete, brick, sand, aggregates, reinforcement and any other civil materials may be done as and when instructed by the engineer. Any materials failing from the test will be not allowed to use at site

9. Safety on works

Safety precautions pertaining to construction works such as excavation trenching, blasting, demolition, provision of scaffolds, ladder, working platforms, gang ways, mixing of asphalt materials, electric arc and gas welding, use of hoisting and construction machinery shall be taken care by the contractor.

10. Antiquities and useful materials

Any finds at the time of excavation such as relics of antiquity, coins, fossils or other articles of value shall be delivered by the contractor to the Engineer and shall be the property of the Government. Any materials obtained from the excavation which in the



opinion of the engineer is useful, shall be stacked separately in regular stacks as directed by the engineer and shall be the property of the Government.

11. Bench marks

Temporary site bench mark shall be constructed at the construction site, where so required by the Engineer.

12. Quality of Materials and Workmanship

The materials and workmanship shall be of the best of their respective kinds and shall be to the approval of the Employer or his representative on Site, the Engineer.

The contractor shall carry out modifications in the procedure of work, if found necessary, as directed by the Engineer during inspection. Substandard quality of work shall be rectified/redone at the contractor's own cost, and defective work/material shall also be removed from the site of works by the contractor at his own cost.

The Engineer may ask to carry out the field/Laboratory tests mentioned in the specification and the cost of carrying out such tests which include equipment charges, tools, materials, labour and incidentals to perform tests and other operations of quality control according to the specification requirements shall be deemed to be incidental to the work and no extra payment shall be made for the same. Sampling and testing procedure to be used shall be as approved by the Engineer and his decision shall be final and binding on the contractor.

13. Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. In case of any differences between the standards specified and the proposed alternative standards shall be fully described in writing by the Contractor and submitted to the Engineer at least 28 days prior to the date when the Contractor desires the Engineer's consent. In the event of the Engineer determines that such proposed deviations do not ensure substantially equal or higher quality, the Contractor shall comply with the standards specified in the documents.

No materials of any description shall be used without prior approval by the Engineer and any condemned as unfit for use in the works, shall be removed immediately from the site by, and without recommendation to, the Contractor.

If these specifications do not cover these items then the relevant IS codes shall be applicable. Where no reference is found in the above specifications for an item of work then sound engineering practice as decided by the Engineer shall be applicable and the decision of the Engineer in respect to all such matters relating to specifications shall be final and binding on the contractor.



14. Signboards

The Contractor shall erect signboards in prominent positions adjacent to the works to the satisfaction of the Engineer/in line with the requirement of CDB.

15. Environmental Management Plan

The Contractor's shall submit an Environmental Management Plan, where the Contractor explains how the site shall be organized, how the contractor shall proceed with the works, and how the activities shall be executed to comply fully with the rules explained in the Bhutanese Environmental Codes of Practice.

15.1 Location of Camp

The contractor shall locate the Contractor Camp away from settlements, drinking water supply intakes, landslides or flood prone areas. This will help to avoid social conflicts and the pollution of such sites and unsanitary waste disposal.

16. Scope of Works

The scope of works for civil works, architectural, structural and foundations shall include preparation of ground, supply of all materials to site including insurance and storage, provision of all labor, qualified supervisory personnel, instruments, tools, erection of plant and equipment, fixtures, fittings and all temporary and permanent works necessary, whether or not such items are specifically stated herein for satisfactory completion of the job in all respects in accordance with the specification or as mentioned in the BoQ.

17. Grading & Leveling of Area

Site be graded to the required level by cutting & filling. In case of filling, the excess depth be brought to the required level by using cement concrete of M-10 Grade. Area shall also be cleared of Jungle, bushes, vegetation, trees including its roots etc. and stacking of serviceable materials and disposal of other material as directed by engineer. Filling in the excavated areas shall be done with sand.

18. Excavation

- Earthwork in excavation for various foundations can be carried in all types of soil including soft/fissured/hard rock. The work shall also include dewatering in case confronted in any area. The scope of work also covers disposal of surplus excavated material after filling back of foundation.

Excavation shall conform to the dimensions and elevations as shown on the approved drawings. When foundations rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of excavation. When subsoil for foundation becomes murky on top due to construction operation or any other reason, such subsoil shall be removed and replaced by one or more layers of compacted sand or crushed rock as directed by Engineer.



- If any drainage system exists in the vicinity of excavation, Contractor shall control the grading in the vicinity of all excavations so that the surface of the ground will be properly sloped to prevent surface water from running into the excavated areas during construction.
- When machines are used for excavation, the last 300 mm before reaching the required level shall be excavated by hand or by such equipment that shall leave the soil at the required final level in its natural condition.
- When excavation requires shoring, bracing etc. contractor shall submit to engineer drawing g showing arrangement and details of proposed installations and shall proceed only after getting approval from Engineer.
- Excavated material suitable for use as backfill shall be deposited by contractor in storage piles at the area approved by Engineer. However, surplus and/or unsuitable excavated materials shall be hauled and transported to the disposal area designated by Engineer.

18.1 Backfill

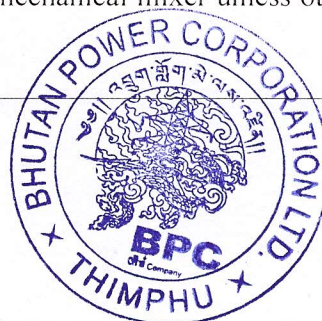
- Contractor shall place and compact the backfill materials to the lines, grade and dimension shown on approved drawings.
- Prior to backfilling, all forms, temporary shoring, timber etc. shall be removed and clean all trash, debris, perishable/organic materials and shall be approved by engineer. The material to be used for backfill, the amount thereof and the manner of depositing the materials shall be approved by Engineer.

19. Cement

It shall be of approved brand. Cement shall be stored and stacked in bags in dry and water proof sheds. Cement bags shall not be stacked more than 10 bags high to avoid lumping under pressure. When removing cement bags for use apply the "first in, first out", rule, that is, take the oldest cement out first. Each consignment of cement shall be stacked separately therein to permit easy access for inspection and facilitate removal. Storage of cement at the site of work shall be at contractor's expense and risk. In the event of any damage occurring to cement due to faulty storage in contractor's sheds or on account of negligence on his part such damages shall be the liability of the contractor.

19.1 Plain Cement Concrete (PCC)

50 mm thick M-10 grade be provided underneath the structural concrete/masonry as mud-mat. Concrete shall be always mixed by mechanical mixer unless otherwise the Engineer permits hand mixing.



19.2 Reinforced Cement Concrete (RCC)

All RCC shall be of M-20 and M-25 grade concrete as per approved design and drawings. Concrete shall be always mixed by mechanical mixer unless otherwise the Engineer permits hand mixing.

20. Stone Masonry Work

All stones shall be wetted before use. Masonry shall be laid truly in plumb or to required batter where so specified. Height of construction in a day shall not exceed 1m so as to avoid excess load on fresh mortar.

21. Water

Water used for mixing mortars and concrete shall be clean and reasonably free from injurious quantities of deleterious such as oil, acids, alkalis, salts and vegetable growth. Generally portable/drinkable water shall be used. Water found satisfactory for mixing is suitable for curing concrete. However, the water used for curing should not produce any objectionable stain or deposit on the concrete surface.

22. Stone boulder

Stone shall be hard, sound, free from decay, weathering and defects like cavities, cracks flaws, sand holes, veins patches of soft or loose materials etc. It shall be obtained from an approved quarry. Where required by the Engineer the stone shall be got tested for water absorption determined as per IS: 1124, the stone boulders shall not have round surfaces. The stone using for RRM works should be in blocks of size 150 x 150 x 900 mm unless directed otherwise by Engineer or stated.

23. Stone aggregates

These shall be crushed or broken from hard stones. It shall be hard, strong, dense and durable, clean and free from soft, friable, thin, flat, elongated or laminated, flaky pieces and shall be roughly cubical in shape. While stock piling, the aggregates shall not form pyramids resulting in segregation of different sized materials and height shall not exceed 1.5 m.

24. Sand

Not more than 10% shall be retained on 4.75 mm IS Sieve. The sum of the percentage of all deleterious materials shall not exceed 5%. It shall not contain harmful organic impurities in any form or quantities which will adversely affect the strength and durability of concrete or mortar. It shall not contain any acidic material, which is likely to attack steel reinforcement.

25. Concrete Admixtures

These shall conform to IS: 9103. Admixture is a material other than water, aggregate, and hydraulic cement and additives like pozzolana or slag and fibre reinforcement used as an ingredient of concrete or mortar and added to the batch immediately before or during its mixing to modify one or more of the properties of concrete in the plastic or hardened state. The different types of admixture are as follows:

- a) Accelerating admixtures,
- b) Retarding admixtures
- c) Water-reducing admixtures
- d) Air entraining admixtures, and
- e) Superplasticizing admixtures.

The chloride content in the admixture shall be declared by the manufacturer. Super plasticizers are expected to be chloride free. Admixtures that contain relatively large amounts of chloride may accelerate corrosion of prestressing steel. Where corrosion of such steel is of major concern, compliance with requirement of the specification of IS 9103 does not constitute assurance of acceptability of the admixture for use in prestressed concrete. In case of reinforced concrete, to minimize the chances of deterioration of concrete, the total chloride content in the concrete should be limited as specified in IS 456: 2000.

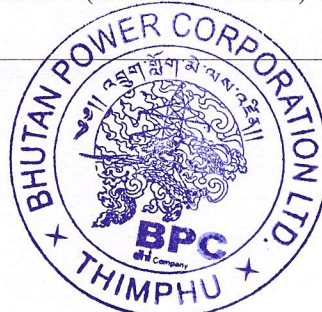
26. Final cleaning

Protective coating and warnings shall remain undisturbed until final acceptance, immediately prior to final inspection, temporary protection covering or coating shall be removed and surfaces shall be washed with a suitable thinner and left in a finished condition having approved uniform appearance and free from all marks and blemishes. Wash and polish glass on both faces.

27. MS Angle, Tee, Channels, Flats/Plates/ Anchor Plates

All finished steel shall be well and cleanly rolled to the dimensions and weight specified subject to permissible tolerances as per IS 1852. The finished material shall be reasonably free from cracks, surface flaws, laminations, rough and imperfect edges, and all other harmful defects. Steel sections, shall be free from excessive rust, scaling and pitting and shall be well protected. The decision of the Engineer regarding acceptability of the any steel section shall be final and binding on the contractor. The mechanical and chemical properties of the structural steel shall be as per Tables 3.6 and 3.7 respectively. The following varieties of steel shall be used for structural purposes: -

- a) S.T. 42-S: - The standard quality steel designated as S.T.42-S, conforming to IS: 226 shall be used for all the types of structure (riveted or bolted) including these



subject to dynamic loading and where fatigue, wide fluctuation of stresses, reversal of stresses and great restraint are involved as for example crane gantry girders, road and rail bridges etc. It is also suitable for welded structures provided that the thickness of materials does not exceed 20 mm.

- b) S.T.42-W: - The fusion welding quality steel designated as S.T. 42-W, conforming to IS: 2062; shall be used for structures subject to dynamic loading (Wind load is not to be considered as dynamic for this purpose) where welding employed for fabrication and where fatigue, wide fluctuation of stress, reversal and great restraint are involved as for example, crane gantry girders and road bridges.
- c) S.T.42-O: - The ordinary quality steel designated as S.T. 42-O, conforming to IS: 1977 shall be used for structures not subjected to dynamic loading other than wind loads where welding is not employed or/and structures not situated in earthquake zones or/and design has not been based on plastic theory.
- d) S.T.32-O: - The ordinary quality steel designated as S.T.32- O, conforming to IS: 1977 shall be used for doors, windows bars, grills, steel gates, hand railing, builder's hardware, fencing post, tie bars etc.

28. Other Requirements

The design details of foundations for the structures to be constructed by the contractor shall be subjected to approval by Engineer.

Foundation construction works includes excavation in all types of soil and backfill, shoring and pumping out water if required, conducting required tests, necessary embedment, curing and everything required for the satisfactory completion of works.

29. Concrete Works

Water, Cement, fine aggregate and coarse aggregate shall conform to material specifications. Concrete can be specified by proportions or by nominating the required strength.

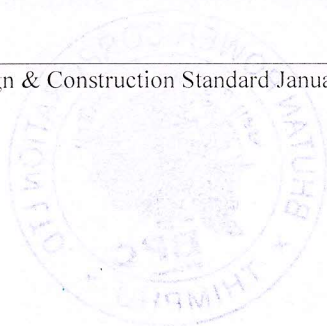
Concrete shall be prepared by mixing graded stone aggregate or gravel of normal size as specified with fine aggregate and cement in specified proportions with required quantity of water.

30. Concrete Curing

Any concreting works shall be cured for a minimum of 14 days and shall be cured twice a day.

31. Bar Bending Schedules

Before cutting and laying of the reinforcement for any RCC work, contractor need to submit the bar bending schedules and get the approval from the Engineer in charge. This shall be checked by the engineer at the site before implementing.



32. Daily Work/Monthly targeted Work Plan

Daily work plan needs to be maintained at the site in proper register. The work plan for next day need to be discussed in the evening and need to follow as recorded.

Contractor need to submit the monthly targeted work plan to the Project Office for the proper monitoring purposes.

33. Miscellaneous

- i) The specification for the works which is not covered above shall be carried out as per the specifications in the BSR and CPWD manual.
- ii) The contractor and engineer shall carryout the joint measurements for all the works executed by recording every 15 days and certified to have executed as per drawing, design and specifications prior to release of on-account payments. Measurement shall be done as per actual and the unit will be as mentioned in the BoQ recording to two places of decimal.
- iii) Provisional quantities are those quantities which may be executed as per site requirements.

34. Dimension of Equipment

Contractors shall provide all dimensions of equipments and Engineer's approval shall be shown on the approved design drawings and shall conform to the requirements described hereafter.

"No changes shall be made without the written approval of Project Manager"

LIST OF DRAWINGS

Sl. No.	Drawing no:	Description
1	BPC-DDCS-2015-1	Underground Cable Installation
2	BPC-DDCS-2015-64	33 kV /11 kV/.415 kV Substation Pipe Earthing
3	BPC-DDCS-2015-65	Distribution Substation typical Earthing Arrangement
4	Construction of cable trench & tray support and laying of cable:	
	(a).	Drawing No. 01
	(b).	Drawing No. 02
	(c).	Drawing No. 03
	(d).	Drawing No. 04

LIST OF ABBREVIATIONS

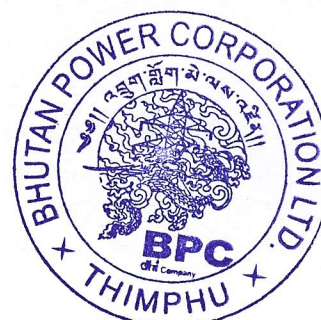
BPC	Bhutan Power Corporation Limited
DDCS	Distribution Design & Construction Standard
DCSD	Distribution and Customer Services Department



ESD	Electricity Services Division
O&M Unit	Operation and Maintenance Unit
TCE	Tata Consulting Engineers
ADB	Asian Development Bank
LV	Low Voltage (415 V, 50 Hz)
MV	Medium Voltage (6.6 kV, 11 kV, 33 kV)
UG	Underground
ABC	Aerial Bundled Conductors
ACSR	Aluminium Conductor Steel Reinforced
MCCB	Moulded Case Circuit Breaker
CB	Circuit Breaker
ACB	Air Break Circuit Breaker
VCB	Vacuum Circuit Breaker
W	Watts
KW	Kilo Watts
MW	Mega Watts
V	Volts
VA	Volt Amperes
kV	Kilo Volts
kVA	Kilo Volt Amperes
PVC	Poly Vinyl Chloride
XLPE	Cross Linked Poly ethylene
DO fuse	Drop out fuse
HRC fuse	High Rupturing Capacity fuse
LBS	Load Break Switch
CSS	Compact Secondary Substations
CRMU System	Closed Ring Main Unit System
RE	Rural Electrification
SRE	Sustainable Rural Electrification



A	Amperes
kA	Kilo Amperes
Hz	Hertz
GI	Galvanized Iron
kPa	Kilo Pascal
N	Newton
kN	Kilo Newton
mm	Milli meter
mm ²	Square milli meter
m	Meter
km	Kilo meter
rms	Root Mean Square
g	Acceleration due to gravity
ONAN	Oil Natural Air Natural
ONAF	Oil Natural Air Forced
OC	Degree Celsius
OLTC	On Load Tap Changer for power transformer
OCTC	Off Circuit Tap Changer
MBL	Minimum Breaking Load
CT	Current Transformer
PT	Potential Transformer
SCADA	Supervisory Control and Data Acquisition
IDMT	Inverse Definite Minimum Time
DC	Direct Current
AC	Alternating Current
LCD	Liquid Crystal Display
LED	Light Emitting Diode
SF ₆	Sulphur-hexa. Fluoride gas
ELCB/RCCB	Earth Leakage Circuit Breaker/Residual Current Circuit Breaker



IPC	Insulation Piercing Connector
IEC	International Electro-technical Commission
IS	Indian Standards
CRGO	Cold Rolled Grain Oriented
MRI	Meter Reading Instrument
NVM	Non-Volatile Memory
GPRS	General Packet Radio Services
GSM	Global System for Mobile
AMR	Automatic Meter Reading
RMR	Remote Meter Reading
AAAC	All Aluminium Alloy Conductor

GLOSSARY OF TERMS

Altitude (m): Altitude is the elevation of a given location from sea level, usually measured in meters.

Ambient temperature (°C): The temperature of the air, water, or surrounding earth.

Average annual rainfall (mm): It is the sum of the monthly rainfall (mm) in a year at a given location divided by (12) twelve.

Average everyday temperature of conductors (°C): The daily average temperature experienced by a conductor in its service at a given location.

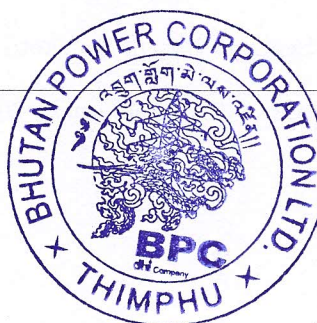
ABC: Stands for Aerial Bundled Cables use for overhead distribution system.

Armoured Cable: A cable provided with a wrapping of metal (usually in the form of tape, strip or wire) providing a mechanical protection and earthing of cables.

AC Resistance and DC Resistance: The resistance offered by a conductor to the flow of AC current which is more than to DC.

Auto-Recloser: A recloser or auto-recloser is a circuit breaker equipped with a mechanism that can automatically close the breaker after it has been opened due to a fault. Reclosers are used on overhead distribution systems to detect and interrupt momentary faults.

Basic-Impulse Insulation Level (BIL): It is a test of a factory impulse-voltage waves (about 1.5 x 40 microseconds). It is used to define the ability of the insulation to handle travelling waves coming into a substation over the transmission lines. Line construction is also rated in BIL. Various line insulators all have a BIL rating as well as the type of construction



Circuit: Arrangement of conductor(s) for the purpose of carrying electrical energy and forming a system or branched system.

Conductor: Any wire, cable, bar, tube, rail or plate used for conducting electricity

Cable: A length of single insulated conductor (solid or stranded), or two or more such conductors, each provided with its own insulation, which are laid up together. The insulated conductor or conductors may or may not be provide with an overall mechanical protective covering.

Circuit breaker: A circuit breaker is switching device, capable of making, carrying and breaking currents under normal operating conditions, and also making, carrying for a specified time and breaking currents under specified abnormal circuit conditions such as those of short circuit.

Covered conductor: A conductor having a specific thickness of insulating material around it.

DO fuse: Stands for Drop out fuse. The drop out fuse is a fuse in which the fuse carrier drops into a position to provide an isolating distance after the fuse has operated.

Distribution Board : A totally enclosed structure or pillar containing links or fuses for interconnecting distributors.

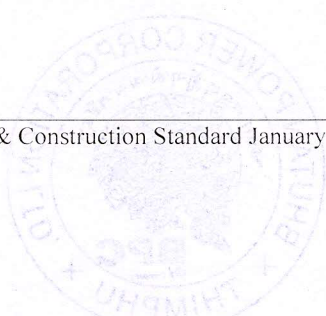
Distribution Mains: The portion of any main with which a service line is, or is intended to be, immediately connected.

Degree of protection: Refer IP code - a international Protection Marking, IEC standard 60529, sometimes interpreted as Ingress Protection Marking, classifies and rates the degree of protection provided against intrusion (body parts such as hands and fingers), dust, accidental contact, and water by mechanical casings and electrical enclosures.

De-rating: Operating the part at higher values than rated specifications to prolong its life. At higher altitudes, air density decreases; hence the dielectric strength of the air is also reduced and de-rating of the equipment is recommended. Operating clearances (strike distances) must be increased to compensate for the reduction in the dielectric strength of the ambient air. Since the current rating decrease at higher altitude, therefore current de-rating is offset by cooler temperature of the ambient air at higher elevation.

Earthing/Grounding: A connection to the general mass of earth by means of an earth electrode. A conducting connection, whether intentional or accidental, by which an electric circuit or equipment is connected to the earth, or to some conducting body or relatively large extent that serves in the place of the earth.

Earth or ground Electrode: A conductor or group of conductors in intimate contact with the earth for the purpose for providing a connection with the ground.



Earthing Conductor: A metallic conductor for connecting electrical equipment to the earth electrode.

Electrical clearance: The shortest distance between two conductive parts (or between a conductive part and the bounding surface of the equipment) measured through air. Clearance distance helps prevent dielectric breakdown between electrodes caused by the ionization of air.

Factor of Safety: Safety factor (FoS) is a term describing the structural capacity of a system beyond the expected loads or actual loads.

Ground Grid: A system interconnected bare conductors arranged in a pattern over a specified and on or buried below the surface of the earth. The primary purpose of the ground grid is to provide safety for workers by limiting potential differences within its perimeter to safe level in case if high currents which could not flow in the circuit being work became energized for any reasons or if an adjacent energized circuit faulted. Metallic surface mats and gratings are sometimes utilized for the same purpose. This is not necessarily the same as a signal reference grid.

High voltage (Hv): Refers to systems with 66 kV voltages or above.

Isokeraunic level (thunder days): The number of thunderstorm days at a given location is known as isokeraunic level.

IEC: A standard approved by the International Electro-technical Commission.

IS: A standard as approved by Bureau of Indian Standards.

Insulation Coordination: The process of correlating the insulation strengths of electric equipment with expected overvoltage and with the characteristics of surge protective devices:

IP code: A coding system to indicate the degree of protection provided by an enclosure against access to hazardous parts, ingress of solid foreign objects, ingress of water and to give additional information in connection with such protection

Low voltage (LV): Voltage not exceeding 415 volts between phase to phase for three phase supply or 250 volts between phase to neutral in case of single phase supply.

Load Factor: The ratio expressed as a numerical value or as a percentage of the energy consumption within a specified period (year, month, day etc) to the energy consumption would result from continuous use of the maximum KW demand occurring within the same period.

Maximum System Voltage (kV): The maximum rms voltage which a given electrical system can support in normal operation.

Minimum temperature of conductors ($^{\circ}\text{C}$): The minimum temperature that a conductor shall experience in its service life at a given location.



Maximum temperature of conductors (°C): The maximum temperature that a conductor shall experience in its service life at a given location.

Minimum approach distances: The minimum approach distance is the closest distance a worker is permitted to approach an exposed energized conductor. Minimum approach distances ensure that workers do not approach or take any conductive object closer to the energized parts.

Maximum Wind loading on conductors/supports (kPa): The specified maximum wind load on conductor or support.

Meter Cupboard: An enclosure having a locked door and inside which a licensee's energy meters, cutouts and such other apparatus installed.

Medium voltages (MV): Refers to systems with 6.6kV or 11kV or 33kV voltage systems.

Nominal System voltage (kV): A nominal value assigned to designate a system of a given voltage class. It is the system voltage by which the system may be designated, and to which certain operating characteristics of the system are related.

Nominal System Frequency (Hz): A nominal value assigned to designate a system of a given frequency class.

ONAN: It stands for Oil Natural Air Natural, where the cooling oil and air are naturally circulated without any additional circulation arrangement. It is one of the methods of cooling Distribution Power Transformer.

ONAF: It stands for Oil Natural Air Forced, where the circulation of oil is natural but the circulation of air is done with the help of a fan. This is another type of cooling method for Distribution Power Transformer.

Overload: Operating conditions in an electrically undamaged circuits, which causes an overcurrent.

Over current: Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit or ground fault.

Overhead line: Electric supply line which is placed above ground and in open air but excluding live rails of a traction system.

Power transformer: A static piece of apparatus with two or more windings which, by electromagnetic induction, transforms a system of alternating voltage and current into another system of voltage and current usually of different values and at the same frequency for the purpose of transmitting electrical power.

Power factor (pf): The ratio of Active Power (KW) to Apparent Power (KVA).

Relative humidity: The amount of moisture content in atmosphere at a given location expressed in percentage.



Rated Impulse Withstand voltage (kV_{peak}):

The maximum crest value of an applied impulse voltage which does not cause a flashover, puncture, or disruptive discharge on the test specimen like circuit breaker.

Rated one minute Power Frequency Withstand voltage (kV): The specified rms test voltage at power frequency that will not cause a disruptive discharge when applied on the specimen for one minute.

Rated one second short time current (kA): It is that short time rms current which a system can carry safely for a period of 1 sec.

Rated short circuit withstand current (KA_{peak}): The maximum crest value of a short circuit current that a system can withstand safely.

Rated bus bar current (A): It is that rms value of current that a bus bar can carry safely.

Rated circuit current (A): It is that rms value of current that an electrical circuit can carry safely.

Rated short circuit breaking current (kA): The peak value of short circuit current that a switching device can break without causing any damage to it, under prescribed conditions of use and behavior.

Rated peak making current (kA_{peak}): The highest value of current in the pole of a switching device when the current is established by the closing of the device, under prescribed conditions of use and behavior.

Rated voltage: The rated voltage is the maximum rms. value of the voltage that the equipment can withstand in normal service.

Sub transmission system or Distribution system: Any system consisting mainly of overhead, cable, and service lines, electrical plant and meters having design voltage of 33 KV and below owned or operated by a licensee for distribution or for retail supply and used for the transportation of electricity from a transmission system or generating sets or other points to the point of delivery to consumers, and includes any electrical plant and meters owned or operated by the licensee in connection with the distribution of electricity. The distribution system shall not include any part of a transmission system, except where used for the supply of electricity to a single consumer or group of consumers.

Seismic acceleration level: It is the acceleration of the ground movement at a location, that take place due to earthquake, expressed in terms of the acceleration due to gravity (g).

Snow incidence in winter (mm): The range of the amount of snow fall in winter at a given location expressed in millimeters (mm).

Surge Arrestor: A protective device for limiting surge voltages on equipment by discharging or bypassing surge current; it prevents continued flow of follow current to ground, and is capable of repeating these functions as specified.



Short Circuit: The connection of two or more points of a circuit through negligible impedance.

Short Circuit Current (kA): An over current resulting from a short circuit due to a fault or an incorrect connection in an electric circuit.

Service Line: Any electric supply line through which electrical energy is or is intended to be, supplied by a licensee.

- a) To a single consumer either from a distributing main or immediately from the licensee's premises, or
- b) From a distributing main to a group of consumer on the same premises or on adjoining premises

supplied from the same point of the distributing mains.

Sealing Ends (sealing box or sealing Chamber): A close box fitted to one end of a cable or external connection, in such a manner as to protect the insulation of cable from air or moisture.

Switchgear: It is a general term covering switching devices and assemblies of such devices with associated inter-connections and accessories.

Switch: A switch is a switching device capable of making, carrying and breaking currents under normal circuit conditions, which may include specified operating overload conditions and also carrying for a specified time currents under specified abnormal circuit conditions such as those of a short circuit. A switch is thus by definition, not intended to make or break fault currents.

Switch fuse: A switch fuse is a switch in which one or more poles have a fuse in series in a composite unit, so that high fault currents are cleared by operation of the fuse.

Solidly Grounded: Grounded through an adequate ground connection in which no impedance has been inserted intentionally

Sectional clearance: Sectional clearance is the distance between the live parts of the phases and the terminals of the work section. The work section or maintenance section may be a platform or ground on which operation personnel can carry out his task safely.

Unarmoured cable: A cable without a wrapping of metal unlike the armoured cable.

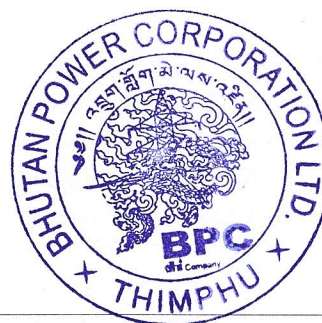
Underground cable: An armoured cable of a given size which can be laid in the ground for the purpose of carrying electric current.

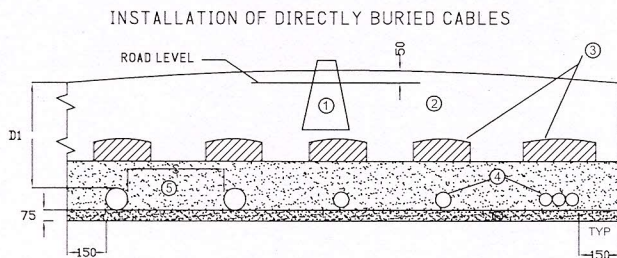
Underground Lines: An electric line laid in the ground using adequate size of an armoured underground cable.

Voltage Drop: The loss of voltage between the input to a system/device and the output from a system/ device due to the internal impedance or resistance of the system/device. In all electrical systems, the conductors should be sized so that the voltage drop never exceeds 3% for power, heating, and lighting loads or combinations of these. Furthermore, the maximum total voltage drop for conductors for feeders and branch circuits combined should never exceed 5%.

Voltage Fluctuation: Voltage Fluctuations are systematic variations of the voltage envelope or a series of random voltage changes, the magnitude of which does not normally exceed the voltage range.

Wind pressure (kPa): The force exerted per unit area of a surface by windblown in that location.

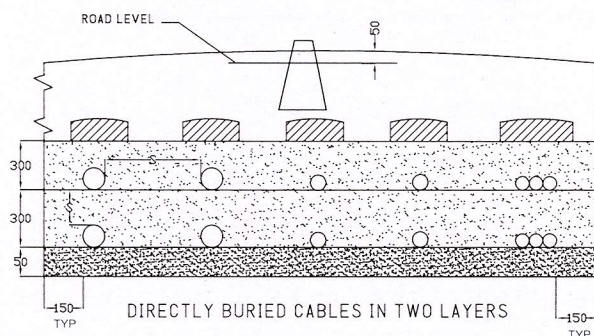




DIRECTLY BURIED CABLES IN SINGLE LAYER

LEGEND

- (1) - CABLE ROUTE MARKER IF PROVIDED..
- (2) - EARTH BACK FILLED & RAMMED.
- (3) - PROTECTIVE COVERS, AS PER IS 1255
- RCC/SLABS/BRICKS FOR HIGH VOLTAGE CABLES
- (4) - ARMoured POWER CABLE
- (5) - FINE SAND/ RIDDLED SOIL COMPACTED.
- (6) - SAND BEDDING




DIRECTLY BURIED CABLES IN TWO LAYERS

DIMENSION (MIN)	1100V GRADE CABLES	11kV	33kV
D1	600	1000	1000
S	d- BETWEEN CABLES OF SAME CLASS * 300mm - BETWEEN CABLES OF DIFFERENT CLASS * 400mm - BETWEEN I-CORE POWER CABLE AND COMMUNICATION CABLE * 400mm - BETWEEN MULTICORE POWER CABLE AND COMMUNICATION CABLE		

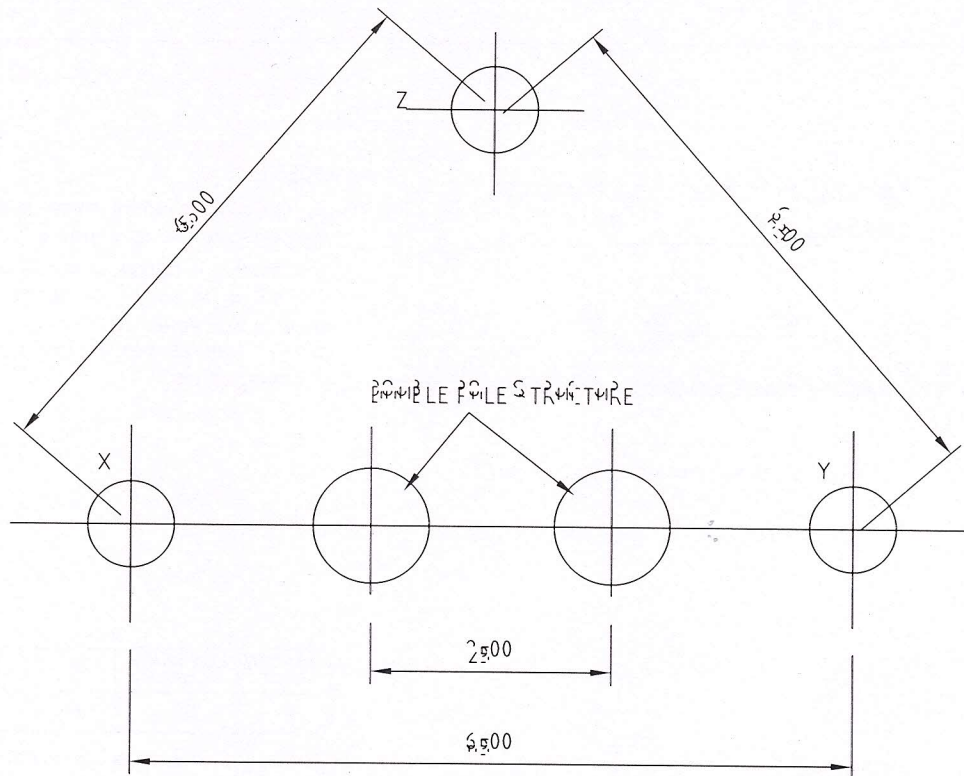
- d. - OVER ALL DIAMETER OF THE BIGGER OF THE TWO CABLE
- * - SPACING SHALL BE KEPT BOTH HORIZONTALLY AND VERTICALLY

NOTE

- SINGLE CORE CABLES SHALL BE RUN IN TREFOIL FORMATION AND SHALL BE BOUND BY PLASTIC TAPES OR 3 mm DIA NYLON CORE EVERY 750mm
- PLASTIC MARKING TAPE TO BE USED FOR UG WHICH SHALL RUN ALONG THE LENGTH OF THE CABLE AND SHALL HAVE CABLE MARKING AT EVERY 1.5METER LENGTH
- CABLE IDENTIFICATION TAG SHALL BE TIED AT BOTH ENDS OF THE CABLE AND ALSO AT AN INTERVAL OF 15 METRES.
- IF THE MINIMUM CLEARANCE AS INDICATED IN THE ABOVE TABLE FOR CABLES OF DIFFERENT CLASSES ARE NOT FEASIBLE, BRICK BARRIERS SHALL BE USED BETWEEN ADJACENT CABLES.
- GI./HUME PIPE SHALL BE PROVIDED FOR ROAD CROSSING.

	BHUTAN POWER CORPORATION LIMITED		ENGINEERING DESIGN & CONTRACTS DEPARTMENT	
			TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD	
		INSTALLATION PRACTICE - DIRECTLY BURIED CABLES		
DESIGNED BY	NAME	DATE	DRAWING NO. BPC-DDCS-2015-1	REVISION 2015
CHECKED BY				
APPROVED BY				





NOTES

1. THE CONNECTIONS TO THE THREE EARTH ELECTRODES SHOULD BE AS FOLLOWS:
 - a. TO ONE OF THE EARTH ELECTRODES ON EITHER SIDE OF DOUBLE POLE STRUCTURE (X-Y)
ONE DIRECT CONNECTION FROM 33kV OR 11kV NEUTRAL LIGHTNING ARRESTERS AND TRANSFORMER TANK
 - b. TO EACH OF THE REMAINING TWO EARTH-ELECTRODES
 - (i) ONE SEPARATE CONNECTION FROM THE NEUTRAL OF THE LOW VOLTAGE SIDE OF THE TRANSFORMER.
 - (ii) ONE SEPARATE CONNECTION FROM TERMINAL EARTH OF TRANSFORMER LT PANEL .
 - (iii) ONE SEPARATE CONNECTION FROM BODY OF TRANSFORMER LT PANEL .
2. 25 x 6 mm GALVANISED IRON STRAP LEADS.
3. THREE NOS. 40mm x 2500mm PIPE ELECTRODES.
4. EARTH ELECTRODES X,Y AND Z TO BE BONDED TOGETHER USING 25x6mm GALVANISED IRON STRAP BURIED 100mm BELOW GROUND LEVEL.
5. REFER DWG BPC-DDCS-2015-66 FOR EARTH POINTS ON TRANSFORMER AND STRUCTURE.



**BHUTAN POWER
CORPORATION LIMITED**

ENGINEERING DESIGN & CONTRACTS DEPARTMENT

TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD

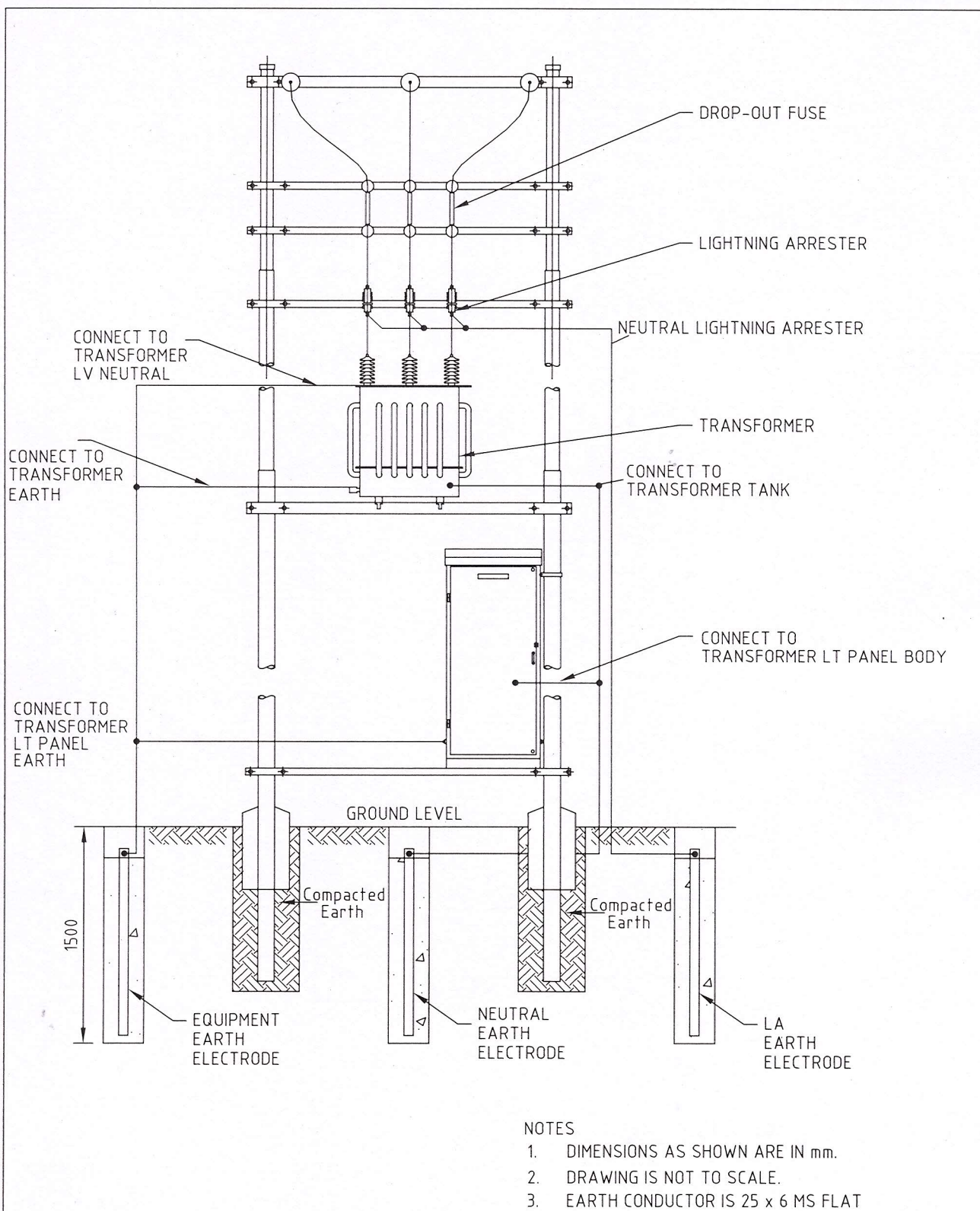
**33 kV OR 11 kV / 415 V DISTRIBUTION SUB-STATION
PIPE EARTHING**


DESIGNATION	NAME	DATE
DRAFTSMAN		
DESIGNER		
DESIGN CHECK		
PROJECT MANAGER		
PROJECT DIRECTOR		

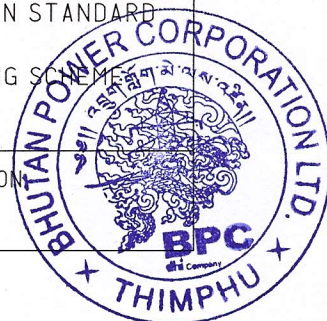
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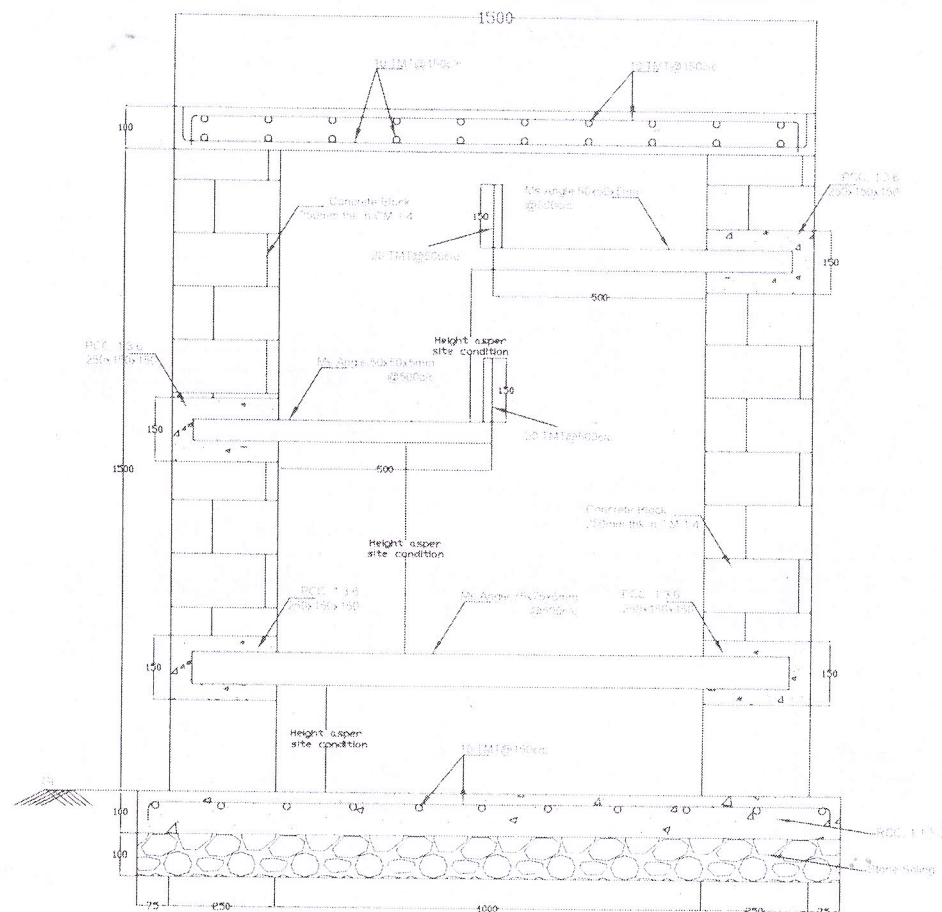
REVISION
2015





<div><div>BHUTAN POWER CORPORATION LIMITED</div></div>			ENGINEERING DESIGN & CONTRACTS DEPARTMENT	
			TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD	
			DISTRIBUTION SUBSTATION TYPICAL EARTHING SCHEME ARRANGEMENT	
DESIGNATION	NAME	DATE	DRAWING NO. BPC-DDCS-2015-65	REVISION 2015
DRAFTSMAN				
DESIGNER				
DESIGN CHECK				
PROJECT MANAGER				
PROJECT DIRECTOR				





EXTERNAL CABLE TRENCH (MONOLITHIC SLAB COVER)

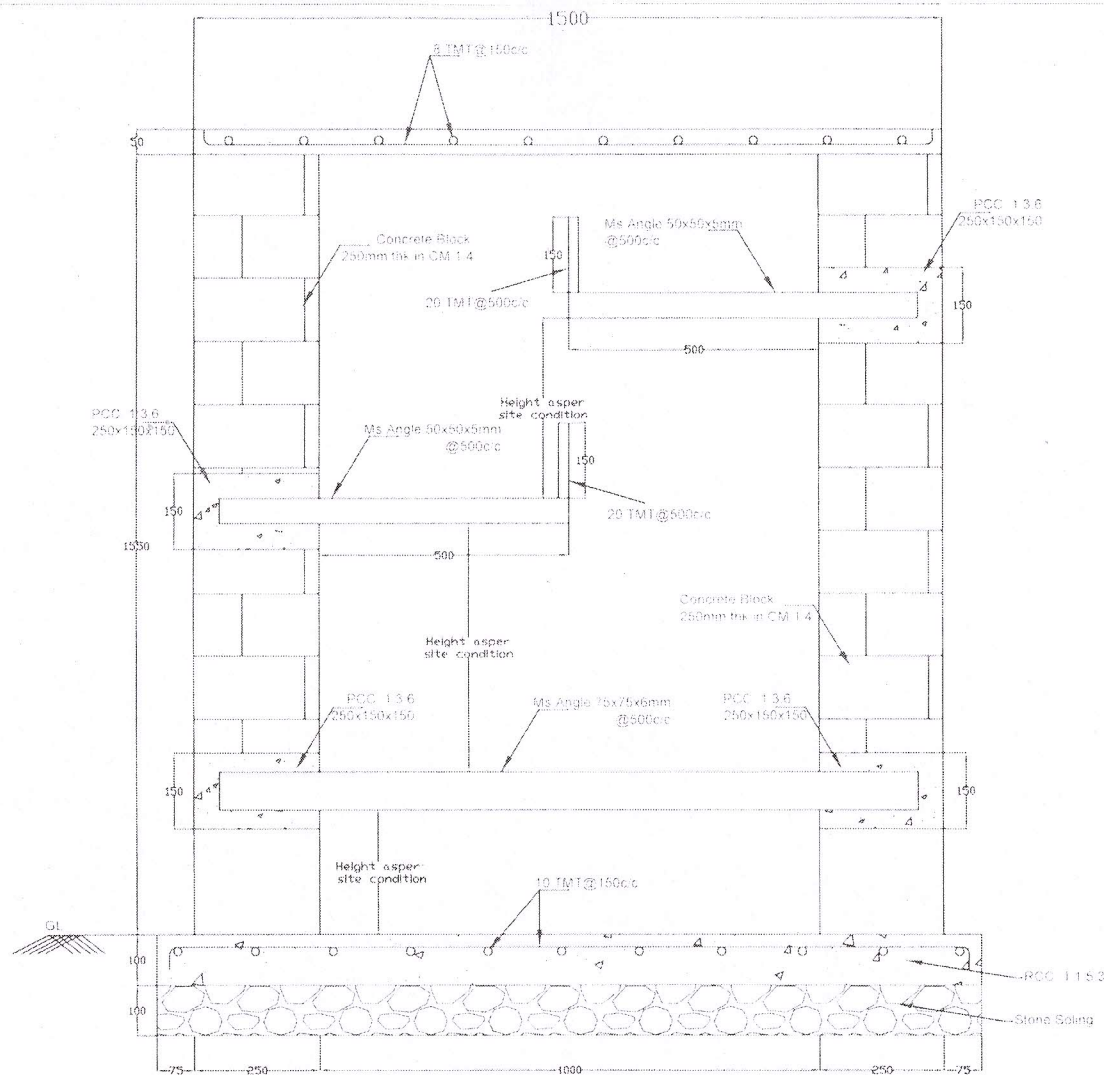
Note:
The height of the cable trench shall depend on the site condition

NOTE: ALL THE DIMENSIONS ARE IN MILLIMETERS



BHUTAN POWER CORPORATION LIMITED
(REGISTERED OFFICE, THIMPHU)
DISTRIBUTION & CONSTRUCTION DEPARTMENT
ELECTRIFICATION DIVISION
THIMPHU, BHUTAN

Designed by	Drawn by	Checked by	Approved by	Project: CONSTRUCTION OF CABLE TRENCH AND LAYING OF CABLES	Revision No.	Date
				CABLE TRENCH (MONOLITHIC SLAB COVER)		



EXTERNAL CABLE TRENCH (PRECAST SLAB COVER)

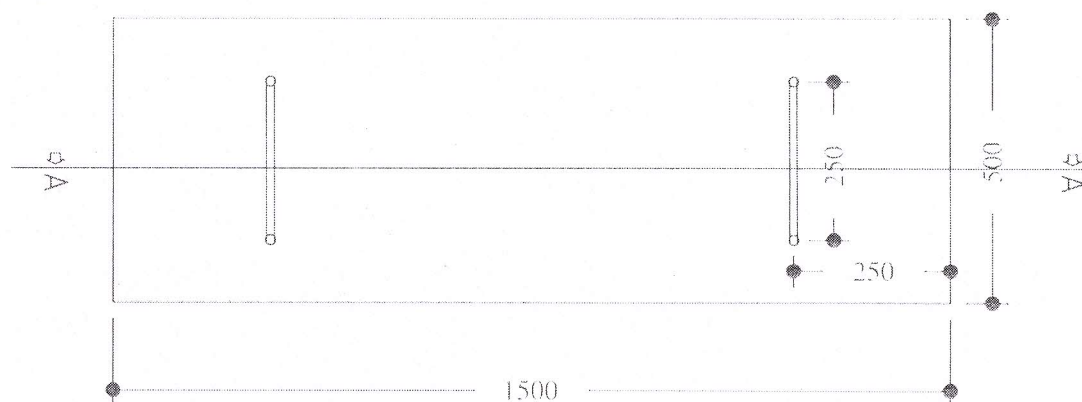
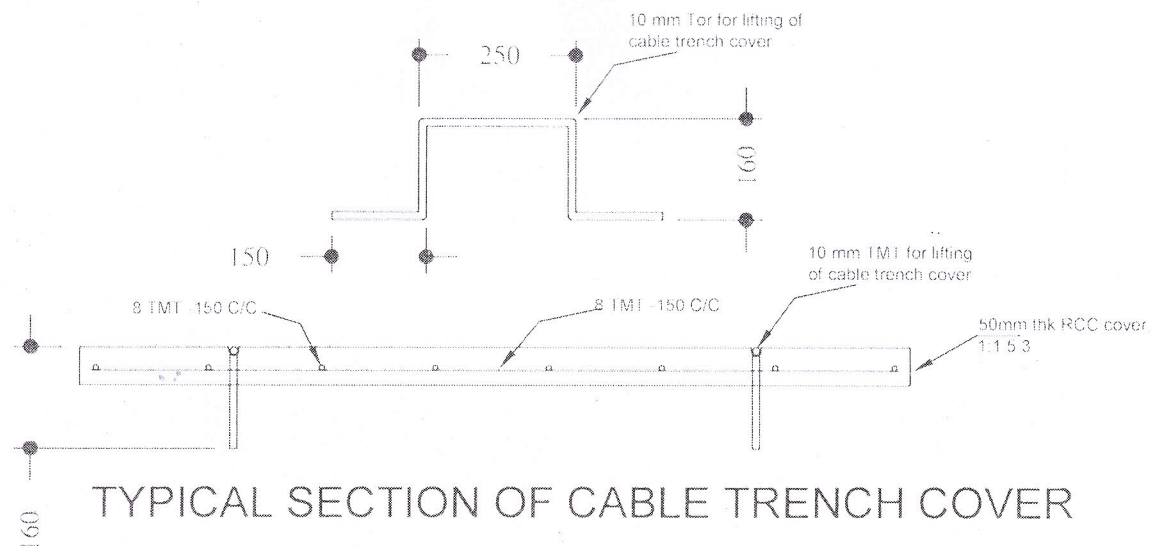
NOTE: ALL THE DIMENSIONS ARE IN MILLIMETERS



BHUTAN POWER CORPORATION LIMITED
(REGISTERED OFFICE, THIMPHU)
DISTRIBUTION & CONSTRUCTION DEPARTMENT
ELECTRIFICATION DIVISION
THIMPHU, BHUTAN

Designed by	Drawn by	Checked by	Approved by	Project: CONSTRUCTION OF CABLE TRENCH AND LAYING OF CABLES	Revision No.	Date:
	CHANDAN KUMAR CHANDAN KUMAR		CHANDAN KUMAR CHANDAN KUMAR			
CABLE TRENCH (PRECAST SLAB COVER)						





Note:

The precast slab shall be at 5m from the start point

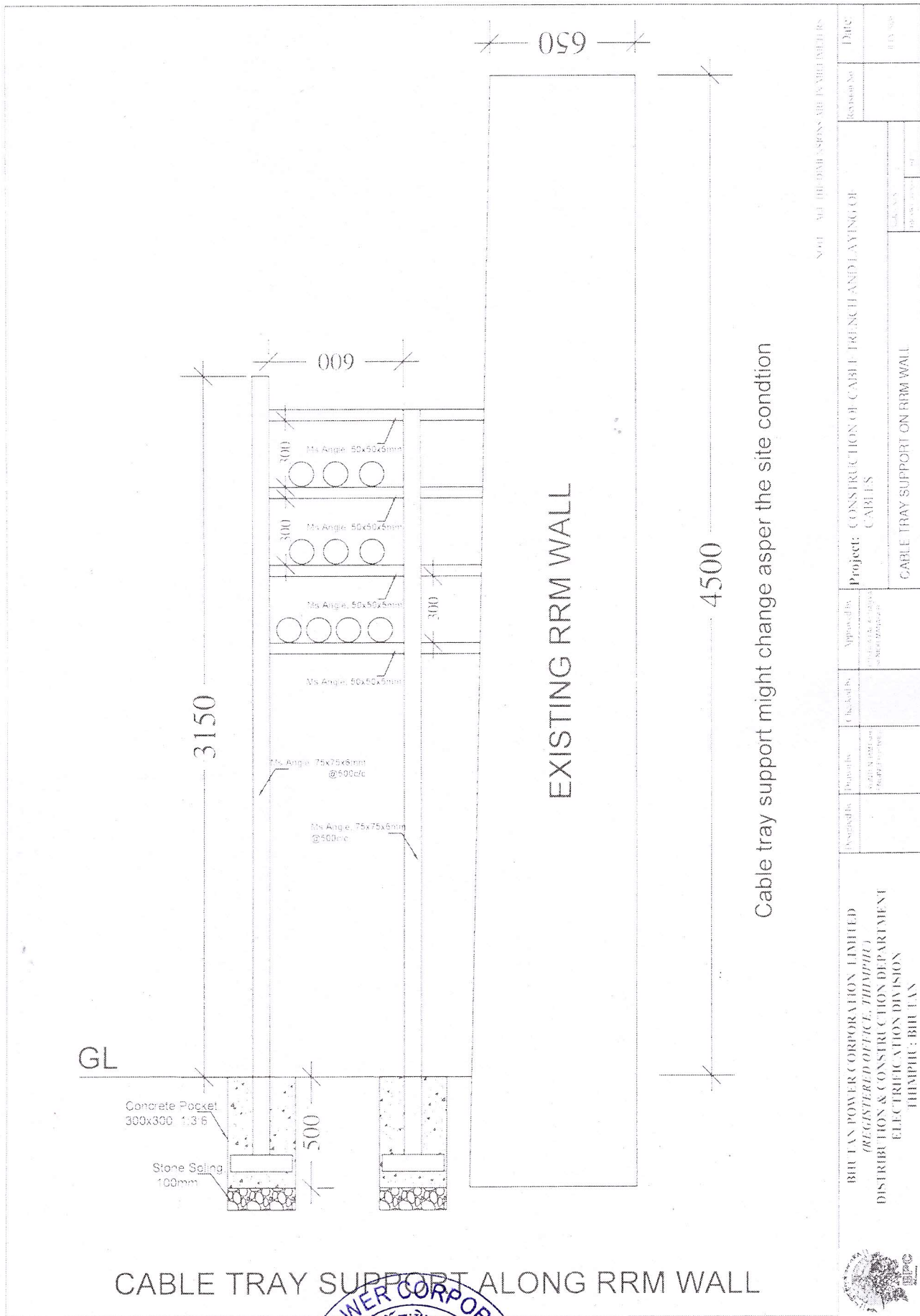
NOTE: ALL THE DIMENSIONS ARE IN MILLIMETERS



BHUTAN POWER CORPORATION LIMITED
(REGISTERED OFFICE, THIMPHU)
DISTRIBUTION & CONSTRUCTION DEPARTMENT
ELECTRIFICATION DIVISION
THIMPHU, BHUTAN

Designed by	Drawn by	Checked by	Approved by	Project:	Revision No	Date
	YONGTUL JOMDOL TECHNICAL OFFICER		YONGTUL JOMDOL TECHNICAL OFFICER	CONSTRUCTION OF CABLE TRENCH AND LAYING OF CABLES		
				TRENCH COVER DETAILS		





CABLE TRAY SUPPORT ALONG RRM WALL



SECTION V

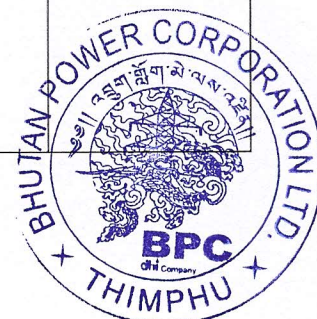
PRICE SCHEDULES



PRICE SCHEDULE

Package: N6 - PW
Dzongkhag: Thimphu

Sl. No.	Work descriptions	Unit	Quantity	Rate (Nu.)	Amount (Nu.)
I	Name of work: Laying of 33 kV cable in the cable trench from Druk School junction to 33/11 kV Substation at JDWNRH				
1	Transportation (both headloading and vehicular) from stores to site, laying of cable in the existing cable trench to complete the works in full.				
1.2	33kV grade, 3 core x 300 sq. mm, XLPE Al. conductor	km	1.500		
2	Termination of indoor/outdoor termination kit (heat shrink) and other accessories to complete the work in all respect				
2.1	3 core x300 sq. mm, XLPE Al. conductor	Set	3		
3	Erection of St. through Jointing kits.				
3.1	3 core x 300 sq. mm, XLPE Al. conductor	Set	6		
	Sub total I	Nu			
	In words				
II	Name of work: Construction of cable trench and cable tray support at Hospital area				
1	Demolishing reinforced concrete, including stacking steel bars and disposal of rubbish at all lead	cu.m	19.35		
2	Demolishing stone rubble masonry including stacking useful materials & disposal of rubbish at all lead- in cement mortar	cu.m	0.61		
3	Dismantling water bound macadam road including stacking of useful materials & disposal of rubbish at all lead	sq.m	20.00		
4	Felling trees including cutting of trunks and branches, removal of roots, stacking of serviceable materials and disposal of rubbish at all lead- Girth > 2400mm	each	1		
5	Clearing grass including removal of rubbish and debris at all lead	sq.m	75.00		
6	Excavation in foundation trenches or drains not exceeding 1.5m in width or area 10 sq.m on plan, including dressing & ramming, disposal of surplus soil at all lead & lift- Hard Soil	cu.m	15.58		
7	Filling of trenches, sides of foundations etc. in layers <200mm using selected excavated earth, ramming etc. within lead 50 m & lift 1.5m	cu.m	3.30		
8	Providing and laying Hand packed stone filling or soling with stones	cu.m	3.21		
9	Providing and laying in position plain cement concrete excluding the cost of centering and shuttering-1:3:6 (1 cement : 3 sand : 6 graded crushed rock 20 mm nominal size) - All work upto plinth level.	cu.m	6.73		
10	Providing & laying in position reinforced cement concrete excluding the cost of centering, shuttering and reinforcement - all work upto plinth level- 1:1.5:3 (1 cement : 1.5 sand : 3 graded crushed rock 20 mm nominal size)	cu.m	21.75		
11	Providing & fixing Thermo-Mechanically Treated reinforcement bar (Yield Strength 500 MPa) for R.C.C work including cutting, bending, binding and placing in position- all dia	kg	1297.48		
12	Providing & fixing centering and shuttering (formwork), including strutting, propping etc. and removal of formwork- in foundation, plinth, slabs and precast slabs	sq.m	28.50		
13	Providing & laying concrete block brick in Foundation & Plinth- In cement mortar 1:4	cu.m	9.60		
14	Steel work in single section including cutting, hoisting, fixing and applying priming coat of red lead paint- In Tees, angles and channels	kg	4659.84		
	Sub Total II	Nu			
	In words				
III	Name of work: 11 kV UG line extension from BPC Substation at Bjemina to M/s Dharma Arts and Crafts, Bjemina Industrial Park including LV UG line construction				
A	Medium Voltage Lines (UG)				
1	Detail route survey, clearing of jungle/bushes along the RoW, rivers, footpath and roads etc.; transportation (both headloading and vehicular) from stores to site, digging of trench (0.5 m width & 1000 mm depth) for direct burial, laying of cable including protective RCC tiles (500 x 200 x 50 mm), sand covering of 75mm bedding below and above the cable, erection of cable route marker for every 20 meters and joint marker where ever needed to complete the work in full, as per the approved drawing				

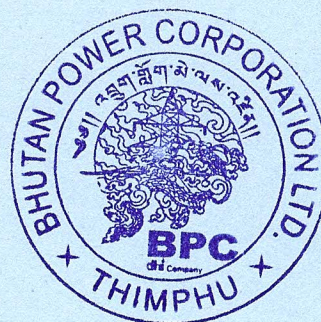


Sl. No.	Work descriptions	Unit	Quantity	Rate (Nu.)	Amount (Nu.)
1.1	11kV grade, 3 core x 150 sq. mm, XLPE Al. conductor	km	0.400		
2	Termination of indoor/outdoor termination kit (heat shrink) and other accessories to complete the work in all respect				
2.1	3 core x 150 sq. mm, XLPE Al. conductor	Set	2.0		
B	Low Voltage Lines (UG)				
1	Detail route survey, clearing of jungle/bushes along the RoW, rivers, footpath and roads etc.; transportation (both headloading and vehicular) from stores to site, digging of trench (0.5 m width & 600 mm depth) for direct burial, laying of cable including protective bricks, sand covering of 75mm bedding below and above the cable, erection of LT cable route marker, joint marker and termination where ever needed to complete the work in full.				
1.1	4Cx400 Sq.mm PVC insulated cable	km	0.300		
C	Substation				
1	Digging, laying, installation and connections of earthing in complete				
1.1	Pipe earthing	set	4		
	Sub Total III	Nu			
	In words				
	Total price (Sub total I+II+III)	Nu.			
	In words				



SECTION VI

BID FORM



SECTION VI

BID FORM

To: The Senior Manager,
Electrification Division,
Distribution Construction Department,
Bhutan Power Corporation Limited,
Chubachu.
Thimphu: Bhutan.

Gentlemen:

1. We have examined and have no reservation to the Bidding Documents including the addenda No :
2. We offer to execute in conformity with the Bidding Documents and in accordance with the completion schedule specified in the Bidding Documents.
3. The Total Price of our Bid, excluding any discounts offered in item (4) below is:
.....
4. The discounts offered and the methodology for their application are:
.....
5. We undertake, if our Bid is accepted, to complete the works within stipulated days in the terms and conditions of the bidding document and calculated from the date of site handing over.
6. If our Bid is accepted, we will provide the performance security in the sum of (Amount), equal to **(10)** per cent of the Contract price, for the due performance of the Contract.
7. Our Bid shall be valid for a period of **90** days from the date fixed for the bid submission deadline in accordance with Bidding Documents and it shall remain binding upon us and may be accepted at any time before expiration of that period.
8. We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents.
9. We understand that this Bid, together with your written acceptance thereof in your Notification of Award, shall constitute a binding Contract between us, until a formal contract is executed.
10. We understand that you are not bound to accept the lowest-priced of any Bid that you may receive.

Dated this _____ day of _____, 2020.

_____ (Signature)

_____ (in the Capacity of)

Duly authorized to sign Bid for and on behalf of _____

_____ (Signature of Witness)

Witness _____

Address _____



SECTION VII

OTHER FORMS



SECTION VII

1. Bid Security Form
2. Contract Form
3. Performance Security Form
4. Advance Payment Security Form
5. Form of Information for Establishment of Bidder's Eligibility.
6. Form of Information for Establishment of Bidder's Qualification.
7. Confirmation of Litigation History
8. Average Performance Scoring form



1. Bid Security Form

WHEREAS _____ [Name of Bidder] (Hereinafter called "the Bidder") has submitted its Bid dated _____ [Date] for the construction of _____ (Name of the package) (hereinafter called "the Bid").

KNOW ALL MEN by these presents that WE _____ [Name of Bank] of _____ [Name of Country] having our registered office at _____ (hereinafter called "the Bank") and bound unto Bhutan Power Corporation Limited (hereinafter called the Employer) in the sum of _____ (Amount of the Guarantee in Words and Figures), for which payment well and truly to be made to the said Employer, the Bank binds itself, its successor and assigns, by these present. Sealed with the Common Seal of the Bank this _____ day of _____, 2020.

THE CONDITIONS of this obligation are:

1. if the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid form; or
2. if the Bidder does not accept the correction of arithmetical errors of his bid price in accordance with the instruction to Bidders; or
3. if the Bidder, having been notified of the acceptance of its Bid by the Employer during the period of bid validity:
 - (a) fails or refuses to execute the Contract Form, when requested; or
 - (b) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders;

We undertake to pay to the Employer up to the above amount, according to, and upon receipt of, its first written demand, without the Employer having to substantiate its demand, provided that in its demand the Employer will note that the amount claimed by it is due to it owing to the occurrence of one or both of the two above-stated conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including _____ days after the period of bid validity, and any demand in respect thereof should reach the Bank not later than such date.

[NAME OF BANK]
by
(Title)
Authorized representative



2. Contract Form (To be use later)

This Agreement made this _____ day of _____, 2020, between Bhutan Power Corporation Limited (hereinafter "the Employer") of the one part and _____ (hereinafter "the Contractor") of the other part.

WHEREAS THE Employer is desirous that certain works should be executed by the Contractor, viz. _____ and has accepted a Bid by the Contractor for the execution and completion of such works and remedying of any defects therein. (hereinafter "the Contract Price").

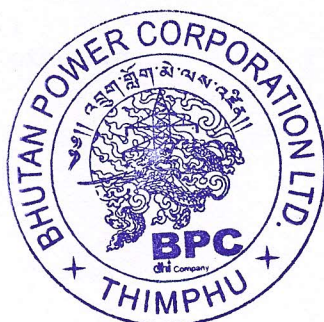
Now this agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and read and construed as part of this Agreement, viz:
 - (a) This Agreement;
 - (b) Letter of Acceptance;
 - (c) The said Bid;
 - (d) Conditions of Contract;
 - (e) The Specifications;
 - (f) The drawings;
 - (g) The Price Schedules; and
 - (h) The Schedules of Supplementary Information.

This Contract sets forth the entire contract and agreement between the parties pertaining to the Works described herein and supersedes any and all earlier verbal or written agreements pertaining to the Contract.

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.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects herein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract, at the times and in the manner prescribed by the Contract.



5. Any notice under this Contract shall be in the form of letter or facsimile. Notices to either party shall be given at such address or addresses as such party shall specify from time to time by written notice to the other. In the absence of such notice to the contrary, notice to the Employer shall be properly addressed to :

[Employer's address and electronic transmission address]

and notice to the Contractor shall be properly addressed to:

[Contractor's address and electronic transmission address]

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

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed in accordance with their respective laws the day and year first above written.

Signature of Employer

Signature of Contractor

Signed, Sealed and Delivered by the said _____
(For the Employer) in the presence of _____

Signed, Sealed and Delivered by the said _____ (for
the Contractor) in the presence of _____



3. Performance Security Form

To: The Director,
Finance & Accounts Services,
Bhutan Power Corporation Limited,
Yarden Lam, Post Box No.580,
Thimphu : Bhutan.

WHEREAS (Name of the Contractor) hereinafter called "the Contractor", has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ (name of the Contract) (hereinafter called "Bid").

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

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

NOW THEREFORE we hereby affirm that we are Guarantors and responsible to you, on behalf of the Contractor, up to a total of (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Bidder to be in default under the Contract, and without cavil or argument, any sum or sums as specified by you, within the limit of (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

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

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee is valid until _____ day of _____ 2019.

[NAME OF GUARANTOR]

By _____

(Title)
Authorized Representative

Date: _____
Address: _____



5. Any notice under this Contract shall be in the form of letter or facsimile. Notices to either party shall be given at such address or addresses as such party shall specify from time to time by written notice to the other. In the absence of such notice to the contrary, notice to the Employer shall be properly addressed to :

[Employer's address and electronic transmission address]

and notice to the Contractor shall be properly addressed to:

[Contractor's address and electronic transmission address]

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

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed in accordance with their respective laws the day and year first above written.

Signature of Employer

Signature of Contractor

Signed, Sealed and Delivered by the said _____
(For the Employer) in the presence of _____

Signed, Sealed and Delivered by the said _____ (for
the Contractor) in the presence of _____



4. Advance Payment Security Form

To: The Director,
Finance & Accounts Services,
Bhutan Power Corporation Limited,
Yarden Lam, Post Box No.580,
Thimphu : Bhutan

[Name of Contract] _____

Gentlemen:

In accordance with the payment provision included in the Clause 45 of the Conditions of Contract to provide for advance payment, [name and address of Contractor] (hereinafter called "the Contractor") shall deposit with the Employer a bank guarantee to guarantee its proper and faithful performance under the said Clause of the Contract in an amount of *[amount of guarantee in figures and word]*.

We, the *[bank or financial institution]*, as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to the Employer on its first demand without whatsoever right of objection on our part and without its first claim to the Contractor, in the amount not exceeding *[amount of guarantee in figures and words.]*

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

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until Bhutan Power Corporation Limited receives full repayment of the said amount from the Contractor.

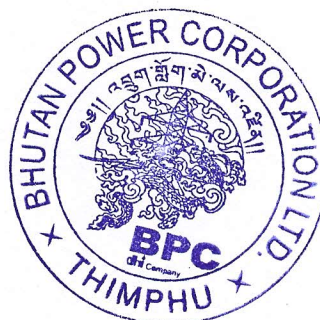
Yours truly,

Signature and seal of the Guarantor: _____

[name of bank or financial institution]

[address]

[date]



5. Form of Information for Establishment of Bidder's Eligibility

The Bidder shall submit with the Bid a letter from Ministry of Economic Affairs validating the license and this Form to evidence the Bidder's eligibility (Refer to Clause 13 in Section II - Instructions to Bidders).

Name of Bidder:	
Class of License, registered for W4 in CDB	
CDB registration number	
Numbers of Work in Hand (as of the date of bid opening)	

If the Bidder has any work in hand, the information on the contract of work(s) in hand, shall be provided in the table below for all the contract(s):

Contract No.1

Name of Project or Contract	
Name of Employer/Client	
Date of award by Employer/Client	
Date of completion scheduled	

Contract No.2

Name of Project or Contract	
Name of Employer/Client	
Date of award by Employer/Client	
Date of completion scheduled	

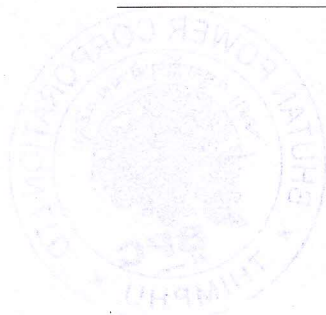
Contract No.3

Name of Project or Contract	
Name of Employer/Client	
Date of award by Employer/Client	
Date of completion scheduled	

Note: If the Bidder has more than 3 works in hand, the above table shall be added to describe all works in hand.

Name of Bidder: _____

Signature of Bidder: _____



6. Form of Information for Establishment of Bidder's Qualification

The Bidder shall submit with this Form to evidence the Bidder's qualification (Refer to Clause 14 in Section II - Instructions to Bidders).

Name of Bidder:	
Offered Package No./Lot No.	

List of Tools and Equipment

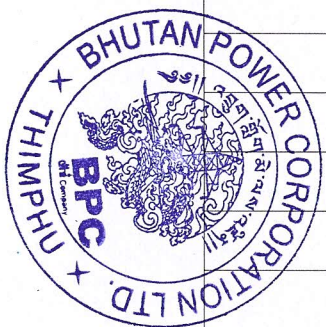
Tools and Equipment	Quantity in Possess

Name of Bidder: _____

Signature of Bidder: _____

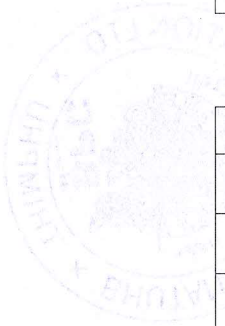


List of Skilled Employee



Name of Employee	CID No.	Position for the Project	Years of Experience	Graduate

List of Experience of Works done of Similar Nature



Name of Contract	Name of Employer	Completion Year	Contract Amount (Nu.)*

*Note: * Approximate contract amount shall be mentioned in Nu.*

Name of Bidder: _____

Signature of Bidder: _____

7. Confirmation of Litigation History, if any.

Litigation, if any	Parties involved	Year of litigation	Disputed amount

Name of the Firm: _____

CDB Registration No. _____

Authorized Signature* with the company seal and Legal Stamp

* Authorized signatory (If the signing authority is not the proprietor himself/herself, please attach the Power of Attorney duly authorized by the proprietor of the company).



Construction Development Board
Average Performance Scoring Form (CON03)

(This report to be submitted on completion of contract to the e-tool focal person)

Name of the Contractor:

CDB Number:

Name of the Client:

Name of the Project:

Name of Inspecting Engineer:

Award Amount:

Date of Start of Project:

Final Contract Amount:

Date of Completion:

Performance Score Table:-

<i>Sl/No</i>	<i>Description</i>	<i>Total Score</i>	<i>Score Obtained</i>
1	On-time completion	30	
2	Quality of execution	70	
Grand Total		100	

Prepared by:

Checked by:

Name and Signature (Site Engineer)

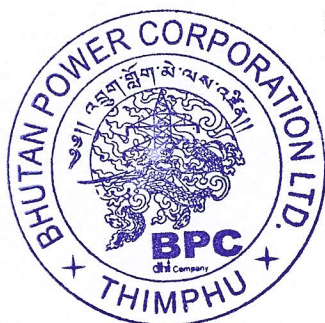
Position

Procuring Agency

Name and Signature (Supervising Engineer)

Position

Procuring Agency



Guideline for Average Performance Score from previous work (100 points)

This parameter gives points to the contractor based on its performance for every project the contractor executes.

The 100% performance score will be composed of the following parameters:

1. *On-time completion (30%)*

2. *Quality of execution (70%)*

1. On-time completion (30 points)

Scoring for this component of performance will be done by the site engineer (that is, the implementing agency). A contractor can be penalized under this component if (s)he fails to deliver the project as per the initial time-lines committed

The site engineer can penalize the contractor to an extent of 30 points. The quantum of penalty could vary as following:

- **10 points deducted for a minor default from 30 points**
(if the final completion of the project is delayed by 10 - 15% as compared to original project duration)
- **20 points deducted for a medium default from 30 points**
(if the final completion of the project is delayed by 15 - 25% as compared to original project duration)
- **30 points deducted for a major default from 30 points**
(if the final completion of the project is delayed by 25% or more as compared to original project duration)

2. Quality of execution (70 points)

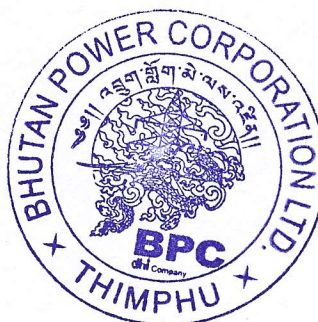
The scoring on this component of performance will be done by the Site Engineer based on the following guideline.

The scoring shall be conducted for each of the following types of construction:

1. Buildings (W3);
2. Roads(W1);
3. Bridges(W1);
4. Electrical/Telecommunication(W4);
- 5.

For each of the above, following percentages shall be distributed:

1. Beginning of construction - 35%
2. During the construction - 35%
3. Completion of construction - 30%



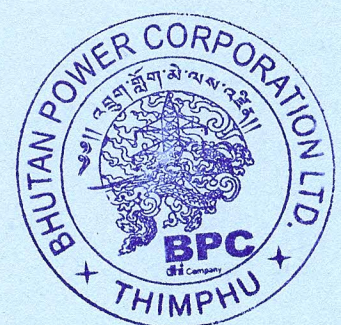
1. ELECTRICAL/TELECOMMUNICATION WORKS

Sl. No.	Construction Components	Scoring %	Score Obtained
I	Beginning phase of Construction		
a	Plant and Equipments	5	
b	Key Technical Personnel	10	
c	Documents (contract agreement, design, drawings)	5	
d	Layout and Alignment	15	
Sub Total		35	
II	During Construction		
a	Use of specified materials	10	
b	Quality of work executed	15	
c	Work executed as per drawing	10	
Sub Total		35	
III	Completion phase of Construction		
a	Finishes	10	
b	Material Brand	10	
c	Testing	10	
Sub Total		30	
Grand Total		100	

Note: - The above obtained score is to be scaled down to 70.



SAMPLE BILL OF QUANTITIES



Bill of Quantity (BOQ)

I	Laying of 33 kV cable in the cable trench from Druk School junction to 33/11 kV Substation at JDWNRH		
Sl. No.	Particulars	Unit	Qty.
I	Foreign Materials		
1	Armrd Al Cable 3Cx300sqmm XLPE Insulated 33 kV grade	Mtr	1,500
2	St. through Jointing kit for 3Cx300 sq.mm. XLPE Ins. 33 kV grade	Set	6
3	Outdoor/Indoor Termination kit for 3Cx300 sq.mm. XLPE Ins. 33 kV grade	Set	3
II	Construction of cable trench and cable tray support at 33/11 kV Substation, JDWNRH		
1	Demolishing reinforced concrete, including stacking steel bars and disposal of rubbish at all lead	cu.m	19.35
2	Demolishing stone rubble masonry including stacking useful materials & disposal of rubbish at all lead- in cement mortar	cu.m	0.61
3	Dismantling water bound macadam road including stacking of useful materials & disposal of rubbish at all lead	sq.m	20
4	Felling trees including cutting of trunks and branches, removal of roots, stacking of serviceable materials and disposal of rubbish at all lead- Girth > 2400mm	each	1
5	Clearing grass including removal of rubbish and debris at all lead	sq.m	75
6	Excavation in foundation trenches or drains not exceeding 1.5m in width or area 10 sq.m on plan, including dressing & ramming, disposal of surplus soil at all lead & lift- Hard Soil	cu.m	15.58
7	Filling of trenches, sides of foundations etc. in layers <200mm using selected excavated earth, ramming etc. within lead 50 m & lift 1.5m	cu.m	3.3
8	Providing and laying Hand packed stone filling or soling with stones	cu.m	3.21
9	Providing and laying in position plain cement concrete excluding the cost of centering and shuttering-1:3:6 (1 cement : 3 sand : 6 graded crushed rock 20 mm nominal size) - All work upto plinth level.	cu.m	6.73
10	Providing & laying in position reinforced cement concrete excluding the cost of centering, shuttering and reinforcement - all work upto plinth level- 1:1.5:3 (1 cement : 1.5 sand : 3 graded crushed rock 20 mm nominal size)	cu.m	21.75
11	Providing & fixing Thermo-Mechanically Treated reinforcement bar (Yield Strength 500 MPa) for R.C.C work including cutting, bending, binding and placing in position- all dia	kg	1297.48
12	Providing & fixing centering and shuttering (formwork), including strutting, propping etc. and removal of formwork- in foundation, plinth, slabs and precast slabs	sq.m	28.5
13	Providing & laying concrete block brick in Foundation & Plinth- In cement mortar 1:4	cu.m	9.6
14	Steel work in single section including cutting, hoisting, fixing and applying priming coat of red lead paint- In Tees, angles and channels	kg	4659.84
III	11 kV UG line extension from BPC Substation at Bjemina to M/s Dharma Arts and Crafts, Bjemina Industrial Park including LV UG line construction		
1	Armrd Al Cable 3c, 150sqmm XLPE Insulated 11 kV grade	Mtr	400
2	Armrd Al Cable 4Cx400sqmm. PVC insulated 415V grade	Mtr	300
3	Outdoor/Indoor Termination kit for 3CX150 sq.mm. XLPE Ins. 11 kV	Set	2
4	11KV Cable Route Marker with nuts and Bolts	Nos	80
5	LV cable route marker	Nos	30
IV	Pipe Earthing	Set	4
1	GI Strip/Earth conductor 25X6 mm	Mtr	120
V	Local Materials		
1	Bricks for cable protection	No	1440
2	Sand for cable bedding	CFT	800
3	Supply of charcoal	Bags	12
4	Supply of salt	Bags	8

