

**Tender Notification for**

**Shifting of Electrical Services for the purpose of Road widening works from old Yamuna Bridge to Delhi –UP border (Apsara Border) against Scheme Nos. EE19SH1018 & YV19SH1005**

**NIT NO CMC/BY/19-20/RB/AS/33**

**Due Date for Submission of Tender: 16.07.2019**

**(Till 1530 HRS)**

**BSES YAMUNA POWER LIMITED,  
Shakti Kiran Building, Karkardooma, New Delhi-110032  
Corporate Identification Number: U40109DL2001PLC111525  
Telephone Number : +91 11 3999 7111  
Fax Number: +91 11 3999 9765  
Website: [www.bsedelhi.com](http://www.bsedelhi.com)**

**INDEX**

**SECTION – I: REQUEST FOR QUOTATION**

**SECTION – II: INSTRUCTIONS TO BIDDER**

**SECTION – III: COMMERCIAL TERMS AND CONDITION**

**SECTION – IV: BILL OF QUANTITY/PRICE FORMAT**

**SECTION – V: TECHNICAL SPECIFICATIONS**

**ANNEXURE**

**1. BID FORM**

**2. PERFORMA OF CONTRACT PERFORMANCE BANK GUARANTEE**

**3. FORMAT FOR EMD BANK GUARANTEE**

**4. REVERSE AUCTION FORMAT**

**5. VENDER CODE OF CONDUCT**

**SECTION I**  
**REQUEST FOR QUOTATION/NIT**

**1.1 GENERAL**

BSES YamunaPower Limited invites sealed tenders in prescribed format for **"Shifting of Electrical Services for the purpose of Road widening works from old Yamuna bridge to Delhi –UP border (Apsara Border )against Scheme Nos. EE19SH1018 & YV19SH1005"**

**Submission of Bid**

- 1.01 **The bidders shall submit their bids in twoparts:Part-1& Part 2.All the parts shall be submitted separately in separate envelope and shall consist of**
- 1.02 **Part-1:**EMD of requisite amount. This envelope shall also contain a separate non-refundable demand draft of Rs 1180/- in case the tender document is downloaded from our website

: Technical bid which shall consists  
Check list  
Documentary evidence in support of qualifying criteria (1.3)  
Original tender document duly stamped & signed on each page as token of acceptance.  
Acceptance to Commercial Terms and Conditions viz Delivery schedule/period, Payment terms etc.  
Acceptance to Technical Specifications

**Part-2** : Financial bid which shall consists of Prices strictly in the Format enclosed in SECTION IV

**First envelope Part -1 marked as " Technical Bid & second envelope " Part-2 as "Financial bid " .**

**Both the envelope shall be sealed individually and placed in third sealed envelope marked as**

**NIT NO CMC/BY/19-20/RB/AS/33 "Shifting of Electrical Services for the purpose of Road widening works from old Yamuna bridge to Delhi –UP border (Apsara Border )against Scheme Nos. EE19SH1018 & YV19SH1005"**

The outer envelope shall also bear the name & address of the bidder along with our tender no. and subject

The bidders are required to submit the bid as mentioned above to the following address

Head of Department  
Contracts & Material Deptt.  
BSES Yamuna Power Limited  
III Floor, 'A' Block  
Shakti Kiran Building  
Karkardooma  
New Delhi-110032

**1.03 COST OF BIDDING**

The Bidder shall bear all cost associated with the preparation and submission of its Bid and the company will in no case be responsible or liable for those costs.

**1.04 Calendar of events & brief of tender**

ESTIMATED COST OF WORK	Rs. 2 Cr.
EARNEST MONEY DEPOSIT	Rs. 4Lakh
COST OF TENDER FORM (NON- REFUNDABLE)	Rs.1180/-
COMPLETION PERIOD OF THE WORK	120 DAYS
TENDER DOCUMENTS ON SALE	02/07/2019 (working days)
Last DATE & TIME OF SUBMISSION OF TENDER	16/07/2019 1530 HRS
DATE & TIME OF OPENING OF TECHNICAL BID (PART-A)	16/07/2019 1600 HRS

The tender document can be obtained from address given below against submission of non-refundable demand draft of **Rs.1180/-** drawn in favor of BSES Yamuna Power Ltd, payable at Delhi:

Head of Department  
Contracts & Material Deptt.  
BSES Yamuna Power Limited  
III Floor, 'A' Block  
Shakti Kiran Building  
Karkardooma  
New Delhi-110032

The tender papers will be issued on all working days upto the date mentioned in clause 1.01. The tender documents & detail terms and conditions can also be downloaded from the website [www.bsesdelhi.com](http://www.bsesdelhi.com). In case tender papers are downloaded from the above website, then the bidder has to enclose a separate demand draft covering the cost of bid documents. Bidders are requested to visit BSES Yamuna power website regularly for any modification /clarification of the bid documents.

**1.2 POINTS TO BE NOTED**

- 1.2.1 Works envisaged under this contract are required to be executed in all respects up to the period of completion mentioned above.
- 1.2.2 Only those agencies, who fulfill the qualifying criteria as mentioned in clause 1.3 should submit the tender documents.
- 1.2.3 Tender document consists of the following:
- a. Request for quotation/ Notice Inviting Tender
  - b. Instructions to Tenderers
  - c. Commercial Terms & conditions
  - d. Bill of Quantities/ Price Format
- 1.2.4 The Contract shall be governed by the documents listed in para 1.2.3 above.
- 1.2.5 BSES Yamuna Power Ltd reserves the right to accept/reject any or all Tenders without assigning any reason thereof and alter the quantity of materials mentioned in the Tender documents at the time of placing purchase/ work orders. Tender will be summarily rejected if:
- (i) If **Earnest Money Deposit (EMD)** of requisite amount is not deposited in shape of Bank Draft/Pay Order/FDR/BG drawn in favour of BSES Yamuna Power Ltd, payable at Delhi.
  - (ii) Tender is received after due date and time **or any deviation in the tender document.**
  - (iii) **BSES Yamuna power reserve the right to accept & reject any or all the bids without assigning any reason thereof.**

**1.3 Qualifying Criteria:-**

The prospective bidder must qualify all of the following requirements to be eligible to participate in the bidding. Bidders who meet following requirements will be considered as successful bidder and management has a right to disqualify those bidders who do not meet these requirements.

- Bidder must have executed the works of like nature and having extensive experience of carrying out similar types of work in last 5 financial year (14-15, 15-16, 16-17,17-18 & 18-19) & having performance certificate .
- Bidder must have executed the works of like nature and having extensive experience of carrying out similar types of work. They should have successfully completed in preceding FIVE years:-

Five similar completed works value not less than amount equal to 20 Lacs each.

OR

Three similar completed works value not less than amount equal to 30 Lacs each.

OR

Two similar completed works value not less than amount equal to 45 Lacs each.

OR

One similar completed work value not less than amount equal to 1cr each.

Copies of work order and performance certificate on client Letterhead shall be provided as proof of having relevant experience as above.

- Bidder must provide proof of having **solvency of an amount equal** to Rs. 50Lacs from any nationalized/ scheduled commercial bank.
- Bidder must provide proof of having average annual turnover **of Rs. 2** Crore during the last three financial years.( 16-17 ,17-18 & 18-19)

Bidder should have valid Registration No. of Service Tax, DVAT& GST

Bidder should have PAN No & should fulfill all statutory compliances like PF, ESI registration

- Bidder should have a valid Electrical License issued by Delhi Govt. for doing electrical works in Delhi region.
- The bidder shall submit all necessary documentary evidence to establish that the Bidder meets the above qualifying requirements.

Please Note:

- a) Firms who are debarred / blacklisted in other utilities in India will not be considered.
- b) Bids received from Joint Ventures / consortium shall not be considered
- c) Company reserves the right to carry out capability assessment of the Bidders and company's decision shall be final in this regard.

Also, the Bidder shall furnish the following commercial & technical information along with the tender:

- a) Latest balance sheet
- b) Details of constitution of the company (Proprietary/ Limited. Along with details)
- c) Memorandum & Articles of Association of the Company
- d) Organization Chart of the company
- e) Experience details with credentials
- g) Turnover certificate issued by C.A for the last three Financial Years.

#### **1.4 Bidding and Award Process:-**

Bidders are requested to submit their offer strictly in line with this tender document. NO DEVIATION IS ACCEPTABLE. BYPL shall response to the clarifications raised by various bidders and the same will be distributed to all participating bidders through website.

##### **1.4.1 Evaluation criteria**

1. The bids will be evaluated technically& commercially on the compliance to tender terms & conditions
2. Bidders have to mandatory quote against each item of schedule of items (annexure). Failing to do so BSES may reject the bids.
3. **BSES shall prefer to split the overall contract , the decision of BSES Yamuna shall be final & binding on the successful bidders .**
4. The Company reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without any reason.



BSES YAMUNA POWER LTD.

Abnormally higher or abnormally lower bids shall not be considered with respect to estimated cost. The criteria decided by BYPL on this shall be final and binding on the bidders and will not be open for discussion under any circumstances.

Bidding firms should also to maintain the quality & safety of the work execution, penalty clause is embedded in the contract, please read carefully. Therefore, the bidding firms are advised to quote their Margin / Administrative Service Charges accordingly.

5. Company intends to award the business on a lowest bid basis, so contractors are encouraged to submit the bid competitively. The decision to place order/LOI solely depends on Company on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that Company may deem relevant.
6. The Company reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without any reason.
7. In case any contractor is found unsatisfactory during the execution process, the award will be cancelled and BYPL reserves the right to award other contractors who are found fit.

#### **1.4.2 FINANCIAL BID EVALUATION THROUGH REVERSE AUCTION:**

Reverse auction shall be conducted for finalization of contract and the details of the price bid shall not be shared with bidders. The qualified bidders will participate in reverse auction through SAP-SRM tool. The reverse auction process shall be governed by the terms and conditions enclosed as Annexure-A in this tender document. Training/details shall be provided to bidders before participation in auction.

Notwithstanding anything stated above, the Company reserves the right to assess bidders' capability to perform the contract, should the circumstances warrant such assessment in the overall interest of the Company. In this regard the decision of the Company is final.

#### **1.4.3 Market Integrity**

We have a fair and competitive marketplace. The rules for bidders are outlined in the Terms & Conditions. Bidders must agree to these rules prior to participating. In addition to other remedies available, we reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the Terms & Condition. Bidders who violate the marketplace rules or engage in behavior that disrupts the fair execution of the marketplace restricts a bidder to length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the market place.
- Breach of the terms of the published in Request for Quotation/NIT.

#### **1.4.4 Confidentiality**

All information contained in this RFQ is confidential and may not be disclosed, published or advertised in any manner without written authorization from BYPL. This includes all bidding information submitted.

All RFQ documents remain the property of BYPL and all bidders are required to return these documents to BYPL upon request.

Bidders who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

**1.5 Contact Information**

<p>Technical clarification, if any, as regards this RFQ shall be sought in writing and sent by post/courier to following address</p>	<p><b>Technical</b></p>	<p><b>Commercial</b></p>
<p><b>Contact Person</b></p>	<p>Head (CES), BYPL Copy to :Head (C&amp;M)</p>	<p>Head (C&amp;M)</p>
<p><b>Address</b></p>	<p>CESDeptt. BSES Yamuna Power Limited III Floor, 'B' Block Shakti Kiran Building Karkardooma New Delhi-110032</p>	<p>Contracts &amp; Material Deptt. BSES Yamuna Power Limited III Floor, 'A' Block Shakti Kiran Building Karkardooma New Delhi-110032</p>



## **SECTION – II: INSTRUCTION TO BIDDERS**

### **1.0 GENERAL**

BSES Yamuna Power Ltd, hereinafter referred to as "The Company "are desirous of awarding work for "

#### **Scheme No/ Name**

EE19SH1018 "EHV Network Shifting " & " YV19SH1005 " 11KV & LT Network Shifting : details in Annexure

The schemes for these projects have been framed. The Company has now floated tender for this work in BYPL as notified earlier in this bid document

### **2.0 SCOPE OF WORK**

The scope shall include material transportation, Barricading , digging of trench, cable laying, supply of HDPE pipe, cable cover etc.(as per attached annexure )

### **3.0 DISCLAIMER**

- 3.01 This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder/Bidding Consortium should conduct its own estimation and analysis and should check the accuracy, reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their own interest.
- 3.02 Neither Company nor its employees will have any liability whatsoever to any Bidder or any other person under the law or contract, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this Document, any matter deemed to form part of this Document, provision of Services and any other information supplied by or on behalf of Company or its employees, or otherwise a rising in anyway from the selection process for the work.
- 3.03 Though adequate care has been taken while issuing the Bid document, the Bidder should satisfy itself that Documents are complete in all respects. Intimation of any discrepancy shall be given to this office immediately.
- 1.05 This Document and the information contained herein are Strictly Confidential and are for the use of only the person(s) to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors).

### **2.00 COST OF BIDDING**

The Bidder shall bear all cost associated with the preparation and submission of its Bid and the company will in no case be responsible or liable for those costs.

## **5. BIDDING DOCUMENTS**

5.01The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents. In addition to the covering letter accompanying Bidding Documents, the Bidding Documents include:

Request for Quotation (RFQ)	- Section - I
Instructions to Bidders (ITB)	- Section - II
Commercial Terms & Conditions	- Section -III
Bill of quantity /Price Format	- Section IV

5.02 The Bidder is expected to examine the Bidding Documents, including all Instructions, Forms, Terms and Specifications. Failure to furnish all information required by the Bidding Documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect will may result in the rejection of the Bid.

## 6.0 AMENDMENT OF BIDDING DOCUMENTS

6.01 At any time prior to the deadline for submission of Bids, the Company may for any reasons, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by Amendment.

6.02 The Amendment shall be part of the Bidding Documents, pursuant to Clause 5.01, and it will be notified in writing by Fax/e-mail to all the Bidders who have received the Bidding Documents and confirmed their participation to Bid, and will be binding on them.

6.03 In order to afford prospective Bidders reasonable time in which to take the Amendment into account in preparing their Bids, the Company may, at its discretion, extend the deadline for the submission of Bids.

## 7.0 PREPARATION OF BIDS

### 7.0 LANGUAGE OF BID

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the Company, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

### 8.0 DOCUMENTS COMPRISING THE BID

The Bid prepared and submitted by the Bidder shall comprise the following components:

- (a) Bid Form ,Price & other Schedules (STRICTLY AS PER FORMAT)and Technical Data Sheets completed in accordance with Technical Specification.
- (b) All the Bids must be accompanied with the required EMD as mentioned in the Section-I against each tender.

### 9.0 BID FORM

9.01 The Bidder shall submit "Original" Bid Form and the appropriate Price Schedules and technical specifications enclosed with the Bidding Documents.

#### 9.02 EMD

Pursuant to Clause 8.0(b) above, the bidder shall furnish, as part of its bid, a EMD of requisite amount as already specified in the Section-I. The EMD is required to protect the Company against the risk of Bidder's conduct which would warrant forfeiture. The EMD shall be denominated in any of the following form:

- (a) Demand Draft/Pay Order drawn in favour of BSES Yamuna Power Ltd, payable at Delhi.
- (b) BG/ Fixed Deposit Receipts (FDR) from a scheduled /Nationalized bank in favor of BSES Yamuna Power Limited valid for 3(Three) months .



BSES YAMUNA POWER LTD.

Earnest money given by all the bidders except the lower bidder shall be refunded within 4 (four) weeks from the date of opening of price bid. The amount of EMD by the lowest bidder shall be adjustable in the security bank guarantee

The EMD may be forfeited in case of:

- (a) If the Bidder withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form or
- (b) in the case of a successful Bidder, if the Bidder does not
  - (i) accept the Purchase Order, or
  - (ii) furnish the required performance security BG.

## 10.0 BID PRICES

10.01 Bidders shall quote for the entire Scope of work with prices for individual items. The tenderer is required, at his expense, to obtain all the information he may require to enable him to submit his tender including necessary visits to the site to ascertain the local conditions, procurement of necessary materials, labour, etc., requirements of the local/government/public authorities in such matters.

Prices quoted by the Bidder shall be "Firm" and not subject to any price adjustment during the performance of the Contract. **A Bid submitted with an adjustable price/PVC will be treated as non-responsive and rejected.**

## 11.0 BID CURRENCIES

Prices shall be quoted in Indian Rupees Only.

## 12.0 PERIOD OF VALIDITY OF BIDS

12.01 Bids shall remain valid & open for acceptance for a period of 90 days from the date of opening of the Bid.

12.02 Notwithstanding Clause 12.01 above, the Company may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and the responses thereto shall be made in writing and sent by Fax/post/courier

## 13.0 ALTERNATIVE BIDS

Bidders shall submit Bids, which comply with the Bidding Documents. Alternative Bids will not be considered. The attention of Bidders is drawn to the provisions regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the Bidding Documents.

## 14.0 FORMAT AND SIGNING OF BID

14.01 The original Bid Form and accompanying documents (as specified in Clause 9.0), clearly marked "Original Bid", must be received by the Company at the date, time and place specified pursuant to Clauses 15.0 and 16.0.

14.02 The original copy 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 indicated by written Power-of-Attorney accompanying the Bid.

14.03 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.



BSES YAMUNA POWER LTD.

## **D. SUBMISSION OF BIDS**

### **15.0 SEALING AND MARKING OF BIDS**

- 15.01 Bid submission: One original (hard copies) of all the Bid Documents shall be sealed and submitted to the Company before the closing time for submission of the bid.
- 15.02 The EMD & Rs 1180 non refundable DD shall be enclosed in a sealed envelope and the said envelope shall be superscribed with part-1 "EMD" . Technical Documents shall be enclosed in a separate sealed envelope and the said envelope shall be superscribed with part-2 "Technical Bid & Commercial Terms & Conditions ". The price bid shall be inside another sealed envelope with superscribedPart-3 —"Financial Bid ".All three envelopes shall be sealed inside another big envelope. All the envelopes should bear the Name and Address of the Bidder and marking for the Original. The envelopes should be superscribed with —"Tender Notice No.& Due date of opening".
- 15.03 The Bidder has the option of sending the Bids in person. Bids submitted by Email/Telex/Telegram /Fax will be rejected .No request from any Bidder to the Company to collect the proposals from Courier/Airlines/Cargo Agents etc shall be entertained by the Company.

### **16.0 DEADLINE FOR SUBMISSION OF BIDS**

- 16.01 The original Bid must be timely received by the Company at the address specified in Section-I
- 16.02 The Company may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with Clause9.0,in which case all rights and obligations of the Company and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended

### **17.0 ONE BID PER BIDDER**

Each Bidder shall submit only one Bid by itself. No Joint Venture/Consortium is acceptable. A Bidder who submits or participates in more than one Bid will cause all those Bids to be rejected.

### **18.0 LATE BIDS**

Any Bid received by the Company after the deadline for submission of Bids prescribed by the Company, pursuant to Clause 16.0, will be declared "Late" and rejected and returned unopened to the Bidder.

### **19.0 MODIFICATIONS AND WITHDRAWAL OF BIDS**

- 19.01 The Bidder is not allowed to modify or withdraw its Bid after the Bid's submission.

## **E. EVALUATION OF BID**

### **20.0 PROCESS TO BE CONFIDENTIAL**

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 Company's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

### **21.0 CLARIFICATION OF BIDS**



**BSES YAMUNA POWER LTD.**

To assist in the examination, evaluation and comparison of Bids, the Company may, at its discretion, ask the Bidder for a clarification of its Bid. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.

## **22.0 PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS**

- 22.01 Company 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.
- 22.02 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. 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.
- 22.03 Prior to the detailed evaluation, Company will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.
- 22.04 Bid determined as not substantially responsive will be rejected by the Company and/or the Company and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

## **23.0 EVALUATION AND COMPARISON OF BIDS**

- 23.01 The evaluation of Bids shall be done based on the delivered cost competitiveness basis.
- 23.02 The evaluation of the Bids shall be a stage-wise procedure. The following stages are identified for evaluation purposes: In the first stage, the Bids would be subjected to a responsiveness check. The Technical Proposals and the Conditional ties of the Bidders would be evaluated.

Subsequently, the Financial Proposals along with Supplementary Financial Proposals, if any, of Bidders with Techno-commercially Acceptable Bids shall be considered for final evaluation.

- 23.03 The Company's evaluation of a Bid will take into account, in addition to the Bid price, the following factors, in the manner and to the extent indicated in this Clause:
- (a) Work completion schedule
  - (b) Conformance to Qualifying Criteria
  - (c) Deviations from Bidding Documents

Bidders shall base their Bid price on the terms and conditions specified in the Bidding Documents.

The cost of all quantifiable deviations and omissions from the specification, terms and conditions specified in Bidding Documents shall be evaluated. The Company will make its own assessment of the cost of any deviation for the purpose of ensuring fair comparison of Bids.

- 23.04 Any adjustments in price, which result from the above procedures, shall be added for the purposes of comparative evaluation only to arrive at an "Evaluated Bid Price". Bid Prices quoted by Bidders shall remain unaltered.



BSES YAMUNA POWER LTD.

## **F. AWARD OF CONTRACT**

### **24.0 CONTACTING THE COMPANY**

- 24.01 From the time of Bid opening to the time of contract award, if any Bidder wishes to contact the Company on any matter related to the Bid, it should do so in writing.
- 24.02 Any effort by a Bidder to influence the Company and/or in the Company's decisions in respect of Bid evaluation, Bid comparison or Contract Award, will result in the rejection of the Bidder's Bid.

### **25.00 THE COMPANY 'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

The Company reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at anytime 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 Company's action.

### **26.0 AWARD OF CONTRACT**

The Company will award the Contract to the successful Bidder whose Bid has been Determined to be the lowest-evaluated responsive Bid, provided further that the Bidder has been determined to be qualified to satisfactorily perform the Contract. Company reserves the right to award order other bidders in the tender, provided it is required for progress of project & provided he agrees to come to the lowest rate.

### **27.0 THE COMPANY 'S RIGHT TO VARY QUANTITIES**

The Company reserves the right to vary the quantity i.e. increase or decrease the numbers/quantities without any change in terms and conditions during the execution of the Order.

### **28.0 LETTER OF INTENT/ NOTIFICATION OF AWARD**

The letter of intent/ Notification of Award shall be issued to the successful Bidder whose bids have been considered responsive, techno-commercially acceptable and evaluated to be the lowest (L1). The successful Bidder shall be required to furnish a letter of acceptance within 7 days of issue of the letter of intent /Notification of Award by Company.

### **29.0 CORRUPT OR FRAUDULENT PRACTICES**

- 29.01 The Company requires that the Bidders observe the highest standard of ethics during the procurement and execution of the Project. In pursuance of this policy, the Company:

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

"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 process or in contract execution; and

"Fraudulent practice" means a misrepresentation of facts in order to influence award process or the execution of a contract to the detriment of the Company, and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the Company of the benefits of free and open competition.



**BSES YAMUNA POWER LTD.**

- (b) Will reject a proposal forward if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question ;
  
- (c) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competingfor, or in executing, a contract.

29.02 Furthermore, Bidders shall be aware of the provision stated in the Terms and Conditions of Contract.

**SECTION – III: TERMS AND CONDITIONS**

**1.0 General Instructions:**

- 1.01** All the Bids shall be prepared and submitted in accordance with these instructions.
- 1.02** Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Company will in no case shall be responsible or liable for these costs.
- 1.03** The Bid should be submitted by the Bidder in whose name the bid document has been issued and under no circumstances it shall be transferred/sold to the other party.
- 1.04** The Company reserves the right to request for any additional information and also reserves the right to reject the proposal of any Bidder, if in the opinion of the Company, the data in support of RFQ requirement is incomplete.
- 1.05** The Bidder is expected to examine all instructions, forms, terms & conditions and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or submission of a Bid not substantially responsive to the Bid Documents in every respect may result in rejection of the Bid. However, the Company's decision in regard to the responsiveness and rejection of bids shall be final and binding without any obligation, financial or otherwise, on the Company.
- 1.06** Quantity mentioned in SECTION-IV is the total quantity. The company reserves the right to split the order among various successful tenderers in any manner he chooses without assigning any reason whatsoever

**2.0 COMMERCIAL TERMS & CONDITIONS:**

**1. Definition:**

The following terms & expressions as used in this work order shall have the meaning defined and interpreted here under:

**1.1. Company:** The terms "Company" shall mean BSES Yamuna Power Limited

Corporate Identification Number: U74899DL2001PLC111525

Telephone Number : +91 11 3999 7111

Fax Number: +91 11 3999 9765

Website: [www.bsedelhi.com](http://www.bsedelhi.com)

having its office at Shakti Kiran Building, Karkardooma, New Delhi-110032 and shall included its authorized representatives, agents, successors and assigns.

**1.2 Contractor:** contractor shall mean the successful Tenderer / vendor to whom the contract has been awarded

**1.3 Rate:** The unit rates for the work to be carried out at site shall be as per finalized unit rates through tender. The Invoice of the Contractor will be processed as per the actual work done and the quantities of each items performed by the Contractor as per the site requirement to be certified by Engineer In-charge.





BSES YAMUNA POWER LTD.

The finalized rates shall be firm for the entire duration of work to be carried out by the Contractor under the work order and are not subject to escalation for any reason whatsoever.

**1.4 Work Order Specification:** The terms "work order Specification" shall mean the Technical specification of the work as agreed by you and description of work as detailed in ANNEXURE enclosed and all such particulars mentioned directly/referred to or implied as such in the work order.

**1.5 Site:** The terms "Site" shall mean the working location mentioned in the work order.

## **2. ENGINEER IN-CHARGE:**

The term "Engineer In-Charge" shall mean the Company's nominated representative for the purpose of carrying out the work.

## **3. EXAMINATION OF SITE AND LOCAL CONDITIONS:**

The contractor is deemed to have visited all the sites comes under BYPL licensed area under the work order and ascertained therefore all site conditions and information pertaining to his work. The company shall not accept any claim whatsoever arising out of the difficulties at site/terrain/local conditions, if any.

## **4. LANGUAGE AND MEASUREMENT:**

The work order issued to the contractor by the company and all correspondence and documents relating to the work order placed on the Contractor shall be written in English language. Metric System shall be followed for all dimension, units etc.

## **5. SCOPE OF WORK:**

**"Shifting of Electrical Services for the purpose of Road widening works from old Yamuna bridge to Delhi –UP border (Apsara Border )against Scheme Nos. EE19SH1018 & YV19SH1005"**

All the labour, cranes, power, tool and tackles, technical supervision etc. are including in your scope of work. Adequate number of engineers, supervisors and labours shall be posted at site and the list of the same along with certificate of Qualification of technical staff should be submitted by the Contractor to the Company for checking the adequacy immediately (with in seven days) after award of contract.

However, Engineer In-Charge shall arrange any permission like Road cutting clearance etc. from the Delhi Civic authorities like MCD, DDA, PWD, DJB and Traffic Police. However, the contractor shall make follow up with local authorities and other connected persons that may be required to carry out the job under this order.



BSES YAMUNA POWER LTD.

All loading/ unloading of materials at work-site shall be your responsibility. Involvement of Crane/Hydra/Tractor/Trailer for this type of work shall be in your scope. Adequate weather protection shall be provided by the contractor to keep the materials safe from sun & rain by providing covered storage space as well as using tarpaulins.

#### **6. ADDITIONAL SCOPE / WORK:**

Any additional work beyond the scope enumerated in the work order above shall be carried out as per the instructions of Engineer-In Charge. The company shall not entertain any claim or increase in the Work Order value due to execution of such additional work if the same is not approved by Engineer In Charge.

#### **7.0 VALUE OF THE WORK ORDER:**

Value of work order will be worked out on the basis of finalized rates

The cost of insurance during loading/unloading of materials/ equipments during its storage and handling/erection at site for installation is included in the contractor's scope and value will be included in the work order value. The unit rates are also inclusive of barricading charges and watch & ward charges during execution and no separate charges shall be paid for the same.

#### **8.0 TAX & DUTIES:**

Prices are inclusive of all taxes and duties including labour cess(except GST on service items)

However, IT / VAT as per applicable rate will be deducted from your bills as Tax Deduction at Source (TDS).

For service part, GST at actual shall be paid on submission of GSTIN Registration and self declaration on your letter head stating that you have deposited/or will deposit the Tax as per the applicable tax laws.

For the supply items,GST is exclusive in the rates.

#### **9.0 PERFORMANCE SECURITY BANK GUARANTEE:**

9.1 CONTRACTOR shall furnish the Security Performance Bank Guarantee in the prescribed format (Annexure 2) within 15 days from the date of issue of Order for due performance of the provisions of Work Order.

9.2 The Security Performance Bank Guarantee shall be of 5% of the total value of order and shall be valid till completion, plus three (3) months towards claim period

9.3 The Security Performance Bank Guarantee shall be issued from any Scheduled /nationalized bank as per company format.

9.4 The Company shall reserve the right to invoke the bank guarantee unconditionally and without recourse to the Contractor, if there is failure to perform any part of the Contract for whatsoever reason. This clause is pertaining to performance of contractual obligations and the decision of Company shall be final in this regard.



BSES YAMUNA POWER LTD.

9.5 In the event, in Company sole judgment, the Contractor has fulfilled all its obligations under this Contract, Company shall release the security performance bank guarantee without interest, within seven (7) days from the last date up to which the performance bank guarantee is to be kept valid or if it is assessed by the Company that Contractor has not fulfilled its obligation then the performance bank guarantee shall be extended by the Contractor till that period as requested by the Company.

#### **10. TERMS OF PAYMENT:**

Payment shall be made to you as under:

i) 80% payment shall be released on submission of bill and certification of work completion by Engineer-In-charge.

The bill shall be paid within 30 days on receipt of such bills at our office.

ii) 10% against submission of Electrical Inspectorate's & QC clearance certificate.

iii) Balance 10% shall be paid on testing and commissioning of entire scheme, work completion certificate issued by our Engineer In charge and on submission of performance Bank Guarantee of equivalent amount, in our format valid up to a defect liability period for 12 months from the date of handing over of the scheme. If any defect noticed and system can not be used by reason of any defect, the defect liability period shall be extended by the period equal to the period during which the system is not in operation.

The contractor shall submit the invoice along with the checklist duly filled in Invoice shall be processed and payment shall be made to contractor on certification of Engineer-In Charge for compliance to check points given in check list.

#### **11. COMPLETION PERIOD:**

You are required to mobilize your manpower within 7 days of receipt of WO and commence the activity as per instructions of Engineer In-charge. The entire work should be completed within 180 days from the date of issue of order

The detailed schedule and milestone completion dates would be as per the contract schedules given from time to time by Engineer In-charge at site. Formal road cutting clearance from MCD, PWD or Road owing agency is made available to you. You shall submit a weekly progress report to Engineer In charge.

#### **12.0) STAFF AND WORKMAN:**



BSES YAMUNA POWER LTD.

(I) It shall be responsibility of contractor

(a) To obtain Contract Labour License from the concerned authorities and maintain proper liaison with them. Necessary Forms for obtaining Labour License would be issued by the company. However you will bear all expenses for obtaining Labour license and registration in PF Department for your scope of work. You will deposit PF of your staff/laborer each month and all related documents should be furnished to us.

b) To obtain workman insurance cover against deployment of workers etc.

(II) To maintain, proper records relating to workmen employed, in the form of various Registers, namely,

a) Register of workmen.

b) Register of muster roll.

c) Register of overtime.

d) Register of wages.

e) Any other register as per latest amendment Labor Act.

The records shall be in the prescribed formats only.

(III) To disburse monthly wages to your workers/ supervisors in time and in the presence of Company representatives or as directed by the Labor authorities.

(IV) To maintain proper liaison with the Project authorities, local police and all other government and local bodies.

(V) To pay your workmen at least not less than the minimum prescribed wages as per state/Central Labour laws as may be, applicable. The contractor shall, be responsible for compliance of all the provisions of minimum Wages Act, PF, ESIC Act workmen Compensation Act and Contract Labour Regulation & Abolition Act the rules made there under. In case of non- compliance of the statutory requirements. The company would take necessary action at the risk and cost of the Contractor.

(VI) To employ required number of skilled/semi-skilled and unskilled workmen as per site requirement to complete the entire project as per schedule. To provide safety shoes, safety helmets, safety belts, gloves etc. to your worker/staff as per requirement during erection work.

(VII) To employ necessary engineering and supervisory staff for completion of the Project in time. While day-to-day management of the site and supervision of the works shall be the responsibility of your Engineer - In charge, he will report to the Engineer in charge to assist him to discharge the overall responsibility of the execution of the project.

### **13.0) CLEANLINESS:**

All debris shall be removed and disposed of at assigned areas on daily basis. Surplus excavated earth shall be disposed of in an approved manner. In short, the contractor shall be fully responsible for keeping the work site clean at all times. In case of non- compliance, company shall get the same done at Contractor's risk and costs.

### **14.0) WORK COMPLETION CERTIFICATION, HANDING OVER AND MATERIAL RECONCILIATION:**

The work carried out by the Contractor under this order has to be certified by Engineer In-charge for satisfactory completion of work allotted to the contractor with respect to specifications / Field Quality Procedures as per applicable



BSES YAMUNA POWER LTD.

standards. In case of modification/correction to be carried out, contractor shall carry out the said modifications/correction without additional cost. The Contractor shall remain in close contact with Engineer In-Charge at site to report the general findings of the fieldwork during the initial as well as later stage of the work at site.

The contractor shall be solely responsible for any shortage or damage of materials issued to them handling of and / or in storage and erection at site and cost of the same will be recovered from the contractor as certified by Engineer In-Charge. Contractor must submit a material reconciliation statement in the approval format with Bill raise by him. The contractor shall maintain an accurate and exhaustive record detailing out the list of all items received by him for the purpose of erection and keep such record open for the inspection of the company.

### **15. PENALTY AND LIQUIDATED DAMAGES:**

**15.1 Penalty:** A penalty of 2.5% of bill amount shall be levied in each case of non-compliance of safety practices and site cleanliness.

**15.2 Liquidated Damages:** In the event of any delay in completion of the work beyond the stipulated time given by in order due to reasons solely attributable to the Contractor, the Contractor shall pay to the Company liquidated damages.

If the Contractor failed perform the services within the time period specified in the order, the Company shall, without prejudice to its other remedies under the contract, deduct liquidated damages a sum equivalent to 2.0% of the billed amount of final work executed for each week or part there of delay until the actual date of completion up to a maximum deduction of 20% of billed amount of final work executed. Once the maximum is reached to Company may consider termination of contract without any liabilities to Company.

Incase the contractor has not mobilized / taking up the job as per the direction of Engineer In-charge, the company have all rights to cancel / re-allocate the work allotted to the contractor.

Engineer In charge should specifically mention the amount of LD levied on the bill of contractor for this job.

### **16. LABOUR, POWER AND WATER:**

During the tenure of this work order all tools, tackles, camp facilities shall be arranged by the Contractor at his cost without any liabilities to the Company.

The company shall provide Electricity power free of cost at work site if possible.

### **17. SECURITY:**

Adequate number of trained Security Guards shall be deployed both at the storage yard and stores as well as places of work to prevent theft and pilferage of material and accessories and various other materials. All security rules and safety rules enforced at site by company shall be strictly observed.



BSES YAMUNA POWER LTD.

## **18. Environmental, Health & Safety Plan**

Contractor will make ensure that the Environment, Health & Safety (EHS) requirements are clearly understood and faithfully implemented at all levels at site as per instruction of Company.

Contractors must comply with these requirements:

- a) Comply with all of the elements of the EHS Plan and any regulations applicable to the work
- b) Comply with the procedures provided in the interests of Environment, Health and Safety
- c) Ensure that all of their employees designated to work are properly trained and competent
- d) Ensure that all plant and equipment they bring on to site has been inspected and serviced in accordance with legal requirement and manufacturer's or suppliers' instructions
- e) Make arrangements to ensure that all employees designated to work on or visit the site present themselves for site induction prior to commencement of work
- f) Provide details of any hazardous substances to be brought onsite
- g) Ensure that a responsible person accompanies any of their visitors to site

All contractor's staff are accountable for the following:

1. Use the correct tools and equipment for the job and use safety equipment and protective clothing supplied, e.g. helmets, goggles, ear protection, etc. as instructed
2. Keep tools in good condition
3. Report to the Supervisor any unsafe or unhealthy condition or any defects in plant or equipment
4. Develop a concern for safety for themselves and for others
5. Prohibit horseplay
6. Not to operate any item of plant unless they have been specifically trained and are authorized to do so.

### **19.0) QUALITY:**

Contractor shall ensure that strict quality is maintained in the Performa and execution of works under this Work Order and Works are executed in conformity with the Specification.

All tools, tackles, instruments and other equipments used in the execution of the Works shall be duly calibrated as required and Contractor shall maintain proper records of such tools, tackles, instruments and / or equipment.

Contractor shall prepare the quality plan as per the specifications and shall strictly monitor compliance with the approved quality plan during the entire period of this Work Order.

### **20.0) SAFETY CODE:**

The Contractor shall ensure adequate safety precautions at site as required under the law of the land to facilitate safe working during the execution of work and shall be entirely responsible for the complete safety of their workmen as well as other workers at site and premises during execution of contract.



BSES YAMUNA POWER LTD.

The contractor shall observe the safety requirements as laid down in the contract and in case of sub-contract (only after written approval of company), it shall be the responsibility of main contractor that all safety requirements are followed by the employees and staff of the sub-contractor.

The contractor employing two hundred employees or more, including contract workers, shall have a safety co-ordinator in order to ensure the implementation of safety requirements of the contract and a contractor with lesser number of employees, including contract workers, shall nominate one of his employees to act as safety co-ordinator who shall liaise with the safety officer on matters relating to safety and his name shall be displayed on the notice board at a prominent place at the work site.

The contractor shall be responsible for non-compliance of the safety measures, implications, injuries, fatalities and compensation arising out of such situations or incidents.

In case of any accident, the contractor shall immediately submit a statement of the same to the owner and the safety officer, containing the details of the accident, any injury or casualties, extent of properly damage and remedial action taken to prevent recurrence and in addition, the contractor shall submit a monthly statement of the accidents to the owner at the end of each month..

### **21.0) STATUTORY OBLIGATIONS:**

The Contractor shall take all steps as may be necessary to comply with the various applicable laws/rules including the provisions of contract labour (Regulation & Abolition Act) 1970 as amended, Minimum wages Act, 1984, Workman Compensation Act, ESI Act, PF Act, Bonus Act and all other applicable laws and rules framed there under including any statutory approval required from the Central/State Governments, Ministry of Labour. Broadly, the compliance shall be as detailed in ANNEXURE I enclosed.

Before commencing the work it would be mandatory for the Contractor to furnish the company the permanent PF code no and ESI of the employees.

### **22.0) WORKMEN COMPENSATION:**

The Contactor shall take insurance policy under the Workman Compensation Act to cover such workers who are not covered under ESI and PF by the CONTRACTOR however engaged to undertake the jobs covered under this order and a copy of this insurance policy will be given to Company for reference and records. This insurance policy shall be kept valid at all times. In case there are no worker involve other than those who are covered under ESI and PF by the CONTRACTOR, the CONTRACTOR shall certify for the same.

The CONTRACTOR shall keep the COMPANY indemnified at all times, against all claims of compensation under the provisions of Workmen Compensation Act 1923 as amended from time to time or any compensation payable under any other law for the time being involving workmen engaged by the CONTRACTOR in carrying out the job involved and against costs and expenses, if any, incurred by the COMPANY in connection therewith and without prejudice to make any recovery.

The COMPANY shall be entitled to deduct from any money due to or to become due to the CONTRACTOR, moneys paid or payable by way of compensation as aforesaid or cost or expenses in connection with any claims thereto and the CONTRACTOR shall abide by the decision of the COMPANY as to the sum payable by the CONTRACTOR under the provisions of this clause.

### **23.0) THIRD PARTY INSURANCE:**

Before commencing the execution of the work the contractor shall take third party insurance policy to insure against any damage or loss or injury which may occur to any property / public property or to any person or any employee or representative of any outside Agency/ the company engaged or not engaged for the work of the company, by or



BSES YAMUNA POWER LTD.

arising out of the execution of the work or temporary work or in carrying out of this Agreement. For third party insurance policies, the contractor shall be responsible for settlement of claims with the underwriters without any liability on the purchaser / owner and will arrange replacements / rectification expeditiously without a waiting settlement by insurance claim at contractor's own cost.

**24.0) SUB-CONTRACTING / SUBLETTING:**

CONTRACTOR shall not assign or transfer the whole or any part of this Work Order or any other benefits accruing there from nor shall it subcontract / sublet the whole or any part of the Works without the prior written consent of COMPANY.

In the event the contractor assigns this work order, contractor's assignees shall be bound by the terms and conditions of this work order and shall , if deemed necessary by COMPANY at the time of such assignment, undertake in writing to be so bound by this Work Order.

Notwithstanding the subletting / subcontracting of any portion of the works, contractor shall remain wholly responsible for the carrying out, completion and satisfactory execution of Works in all respects in accordance with this Work Order, specification, approved drawings and data sheets.

**25.0) INDEMNITY:**

Contractor shall indemnify and save harmless COMPANY against and from any and all liabilities, claims, damages, losses or expenses arising due to or resulting from:

- a) any breach non-observance or non-performance by contractor or its employees or agents of any of the provisions of this Work Order.
- b) any act or omission of contractor or its employees or agents.
- c) any negligence or breach of duty on the part of contractor, its employees or agents including any wrongful use by it or them of any property or goods belonging to or by COMPANY.

Contractor shall at all times indemnify COMPANY against all liabilities to other persons, including he employees or agents of COMPANY or contractor for bodily injury, damage to property or other loss which may arise out of or in consequence of the execution or completion of Works and against all costs charges and expenses that may be occasioned to COMPANY by the claims of such person.

**26.0) EVENTS OF DEFAULTS:**

COMPANY may, without prejudice to any of its other rights or remedies under the Work Order or in law, terminate the whole or any part of this Work Order by giving written notice to the Contractor, if in the opinion of COMPANY, contractor has neglected to proceed with the works with due diligence or commits a breach of any of the provisions of this work order including but not limited to any of the following cases:

- a) Failing to complete execution of work within the terms specified in this work order.
- b) Failing to complete works in accordance with the approved schedule of works.
- c) Failing to meet requirements of specifications, drawings, and designs as approved by COMPANY.
- d) Failing to comply with any reasonable instructions or orders issued by COMPANY in connection with the works.
- e) Failing to comply with any of the terms or conditions of this work order.

In the event COMPANY terminates this work order, in whole or in part, on the occurrence of any event of default, COMPANY reserves the right to engage any other subcontractor or agency to complete the work or any part thereof,





BSES YAMUNA POWER LTD.

and in addition to any other right COMPANY may have under this work order or in law including without limitation the right to penalize for delay under clause 15.0 of this work order, the contractor shall be liable to COMPANY for any additional costs that may be incurred by COMPANY for the execution of the Work.

### **27.0) RISK & COST :**

If the Contractor fails to execute the work as per specification / as per the direction of Engineer's In-charge within the scheduled period and even after the extended period, the contract shall get cancel and company reserves the right to get the work executed from any other source at the Risk & Cost of the Contractor. The Extra Expenditure so incurred shall be debited to the Contractor.

### **28.0) ARBITRATION:**

To the best of their ability, the parties hereto shall endeavor to resolve amicably between themselves all disputes arising in connection with this work order. If the same remain unresolved within thirty (30) days of the matter being raised by either party, either party may refer the dispute for settlement by arbitration. The arbitration to be undertaken by two arbitrators, one each to be appointed by either party. The arbitrators appointed by both the parties shall mutually nominate a person to act as umpire before entering upon the reference in the event of a difference between the two arbitrators and the award of the said umpire in such a contingency shall be final and binding upon the parties. The arbitration proceeding shall be conducted in accordance with this provisions of the Indian Arbitration & Conciliation Act, 1996 and the venue of such arbitration shall be city of New Delhi only.

### **29.0) FORCE MAJEURE:**

The conditions of Force Majeure shall means the events beyond control of the parties effected such as act of God, Earthquake, Flood, Devastating fire, War, Civil Commotion, Cyclone, Industrial Lockout and Statutory Act of the Government having bearing on the performance of the Contract.

The party affected by Force Majeure shall be obliged to notify the other party within 48 hours, by fax/cable, of the commencement and the end of the Force Majeure circumstances preventing its performance of all or any of its obligations under this order.

If performance of obligations under this order is delayed for more than one months due to a continuous Force Majeure, the party not affected by Force Majeure may at any time thereafter while such Force Majeure continues, by notice in writing forth with terminate all or any part of the unperformed portion this order.

If this order or any portion thereof is terminated under Force Majeure conditions, the Contractor shall be liable to the COMPANY for any damages, losses or liabilities as result thereof.

### **30.0) SAFETY CLAUSE**

#### **1. OHS Organization & Responsibility**

1.1 The contractor supervisor will play the role of safety supervisor also simultaneously as contractor has to ensure that their competency in safety or EHS with 40 hours training from reputed agency or trainer, which should verify earlier by BYPL safety department accordingly.

1.2 Apart from the above as an owner of the company contractor & their other key person is also responsible for safety compliance and related issues.

#### **2. First Day at Work - Trade Test, Medical Examination, Induction Training and Issuance of ID-Card**

- 2.1 The contractor shall ensure that all his workers have undergone the safety induction, required trade test and medical examination and have been issued with a valid ID card prior to start work at BYPL site.
- 2.2 All contractor workers shall undergo above as per the BYPL site specific procedure issued from time to time.
- 2.3 The contractor shall ensure that no worker is in any O&M activities until the valid ID card is issued and the same is available by each worker at site including that of sub contractor(s).
- 2.4 In case any worker lost the ID card issued to him, the contractor shall ensure that such incidences are promptly reported to BYPL and duplicate or new ID card is issued immediately after completing formalities as deemed necessary by BYPL.

3. Provision of Safe Working Conditions

3.1 The contractor supervisor shall be allowed to start work at site only after proper verification of adequacy of safety gears/PPE required for the specific job at site by the Safety personnel of BYPL. The list of some standard safety gears and PPE are given as follows. The contractor has to ensure the quality and quantity as per the follows:

3.1.1 Safety Shoes - With Composite/Fiber toes (CE approved / IS 15298) - Mandatory for all personnel working at BYPL O&M. The safety shoes shall meet the following features:

1. Electric Shock Resistant Sole
2. Impact Resistant
3. Scrap/Heat Resistant
4. Slip Resistant
5. Oil and Acid Resistant

Lead MAKE: BATA/LIBERTY

CERTIFICATES REQUIRED:

1. Manufacturer Certificate
2. Test Certificate
3. Authorization of Dealership/Distribution ship

3.1.2 Safety Helmets: (IS 2925 - 1984 or DGMS) with chin strap - Mandatory for all personnel working at BYPL O&M. The specification of safety helmet shall be as given below:

V-GARD HDPE Yellow With 4 Point Fast Trac Ratchet Suspension

Shell Material UV stabilise HDPE, Non vented

Suspension " With 4 Point Fas Trac Ratchet Suspension sewn headband  
" Textile straps made from polyester Suspension  
" point fixing: good positioning, ...stability, better air circulation due to ...limited contact areas with the head  
" Easy clean sweatband  
Size 52-62 cm  
Accessory slot Standard 30 mm with removable HDPE dead plugs suitable to leak proof fitting  
Approvals ANSI/ IEC Z89.1 Class E (electrical)  
Additional Low temperature -10°C (acc. to GB2811), High temperature +50°C  
Colours Yellow  
weight 360 g

Lead MAKE: 3M / KARAM/Honeywell

**CERTIFICATES REQUIRED:**

1. Manufacturer Certificate
2. Test Certificate
3. Authorization of Dealership/Distributionship
- 3.1.3 Full Body positioning Harness: (CE approved / IS 3521 / EN 361 / EN 355) - Shall be used while work is in progress at height more than 1.8 meter or where from a person may fall and get injured. The specification of the Full body harness shall be as given below:

Anchorage Adjustable two chest attachment D-rings and A dorsal attachment D-ring  
Adaptability Adjustable shoulder and thigh straps  
Convenience Shoulder and thigh straps differentiated by a dual colour scheme.  
Ergonomics Ideally. Positioned sit strap for extended comfort.

Size Standard  
weight 1200GMS

**ENERGY ABSORBING FORKED LANYARDS :**

Spec. 44mm wide polyamide webbing.  
Length 1.5 Meter

Lead MAKE: KARAM /LIFEGEAR

**CERTIFICATES REQUIRED:**

1. Manufacturer Certificate
2. Test Certificate
3. Authorization of Dealership/Distributionship
- 3.1.4 Safety Spectacles - Shall be used to protect workers eyes from foreign materials and flying particles. Mandatory for all personnel working at BYPL O&M. Safety goggles shall meet the following feature
  1. Poly carbonate/ Acetate lens for special applications requiring superior chemical resistance.
  2. Industrial version of tough and popular first responder goggles.
  3. SoftFlex low profile frosted frame for increased comfort.
  4. Comfortable headband with length adjustment.
  5. Indirect venting for comfortable, long lasting wear can be worn with safety helmets and over prescription spectacles.
  6. Sightgard + premium anti-fog coating (EN 166 "N") with good anti- scratch properties.

Technical Specification:

Weight 95g.

Lens thickness 1.0mm

Overall width 173mm

Overall length 90mm

Bridge 47.6mm

Lens base 5.5 curve

Lens size 86.1mm verticle, 174mm diagonal

Headband Adjustable length at max.440mm(long enough to fit together with helmets)

Material & colours

Lens Acetate clear, coating, Sightgard + anti-fog according to EN 166 "N" & anti scratch.

Body PVC smoke

Headband holder Nylon

Headband Adustable grey elastic fixed on frame side parts

Marking / Approvals

Standard number EN 166

Frame marking MSA EN 166 34-FT CE

Lens marking 2C-1.2 MSA 1 FT N CE

Filter class 2C (Ultra violet radiation with enhanced colour recognition)

Scale number 1.2: luminous trasmittance-89%

Optical class 1 (best class, for permanent wear)

Mechanical resistance F (low energy impact 45m/s) T (at extreme temperature -5 to +550 C)



Resistance to N(distorted vision due to lens fogging)

UV filter 99.9%

Ordering information 10145578-FlexiChem Sightgard + clear , 6x

Lead MAKE: MSA / UVEX/ 3M

CERTIFICATES REQUIRED:

1. Manufacturer Certificate
  2. Test Certificate
  3. Authorization of Dealership/Distributionship
- 3.1.5 Electrical Insulating Hand Gloves - Shall be used to prevent electric shock based upon the hazards/risks involved in a particular activity. Safety goggles shall meet the following feature
- Breakthrough manufacturing process delivers exception dry grip.
- Soft and flexible for enhanced tactility, high dexterity and wearer comfort.
- Ergonomic design featuring tapered fingers to reduce hand fatigue.
- Relaxed wrist for easy on/off.
- Length 360mm
- Class 2
- Thickness 3.6mm
- Proof test voltage 20000
- Maximum use voltage 11000
- Tensile strength >16mpa[Mega Pascal]
- Puncture resistance >18N/mm [Newton per milli meter]
- Elongation at break >600% [Stretching length]
- Tension set <15%

It should be resist to oil, acid, ultra violet rays and very low temperature.

Each pair of glove should be marked with class, category, month & year of manufacturing, CE logo, batch no. and certified laboratory no.

EN certified to electrical and thermal hazards,

EN certified to thermal & electrical hazards to confirm EN 60-903,

EN certified to mechanical hazard to EN-388

Lead MAKE: Honeywell / ANSELL

CERTIFICATES REQUIRED:

1. Manufacturer Certificate
2. Test Certificate
3. Authorization of Dealership/Distributionship
- 3.1.6 Reflective Safety Jacket - Class -2 Safety Vest mandatory for all personnel working at BYPL O&M. Shall be used by the worker during the work.
- 3.1.7 Warning Tapes - HDPE or LDPE Made of 50 micron thick, non adhesive, width 75mm -Safety Logo embossed at every foot with white and red strips on both sides in Tubular form - Shall be used for barricading area around excavated pit to warn the personnel not to enter in such areas. The same will be provided by BYPL
- 3.1.8 Road barricading cone with barricading tape - Shall be used by the worker during the operation / maintenance work. The same will be provided by BYPL.
- 3.1.9 Arc Protection Suit - shall be used by the worker for all HT/ EHV related works, The same will be providing by BYPL
- 3.2 PPE' REQUIREMENT
- 3.2.1 Contractor has to ensure the following PPE's to be procured from reputed authorized dealer or manufacturer with all required certificate and make / model as said in clause 6.1.

S.NO.	NAME OF THE PPEs	LINEMAN / FITTER	HELPER	SUPERVISOR
1	SAFETY HELMET	"	"	"
2	FULL BODY HARNESS (POSITIONING BELT)	"	X	X
3	ELECTRICAL HAND GLOVES	"	"	X
4	SAFETY SHOES	"	"	"
5	SAFETY GOGGLES	"	"	"
6	REFLECTIVE JACKET	"	"	"

- 3.2.2 Contarctor has to ensure for proper distribution of required PPE'S among their workers with receiving in attached format (Annexure- 4). All the bills/ challan of PPE's submitted alongwith issuance of format duly signed by individual worker and to be verified/ certified by concern Head -Division.
- 3.2.3 Contractor has to submit the bill/ challan of procurement of PPE's and distribution of the same with evidence to the safety department as well as to the finance department alongwith claiming of their first monthly RA bill.
- 3.2.4 If contractor failed to provide the same PPE's as per contract, the said PPE's will be issued them from BYPL store with immediate effect. And the 20% extra amount with procurment cost will be recovered from their next monthly bill cycle.

4. Integrated Management System & Audits

4.1 The Contractor shall work in the framework of Integrated Management System (IMS) and shall maintain documentation as prescribed in the IMS Manual of BYPL.

4.2 All contractors during their currency of contract shall strive to continuously improve and demonstrate strict compliance to ISO 9001, ISO 14001 & OHSAS 18001 standards of BYPL.

4.3 To verify compliance and to continually improve the management system, all contractors shall be subjected to both internal & external audits.

5. Medical Examination

5.1 The contractor shall arrange a medical examination of all his employees including his sub-contractor employees like lineman, ALM, supervisor, Fitter, welders, gas cutters, drivers, workers supposed to work at height (and any other trade specified deemed necessary by BYPL at the time of deployment then annually) before employing, after illness or injury, if it appears that the illness or injury might have affected his fitness and, thereafter, once in every year as per the provisions of applicable laws or as prescribed by BYPL with proper record.

5.2 Records of medical examination as described above shall be maintained at the contractor premises and shall be promptly produced as and when demanded by BYPL.

5.3 No person about whom the Contractor knows or has reason to believe that he is a deaf or he has a defective vision or he has a tendency to giddiness shall be required or allowed to work in any O&M operation or other construction work which is likely to involve a risk of any accident either to the worker himself or to any other person.

6. Working at Height

6.1 The Contractor shall ensure that all works carried out at a height of 2 Meter or more shall only be started after obtaining a permit to work at height, which shall be issued as per the procedure of BYPL by authorized personnel.

6.2 The contractor shall ensure that all control measures mentioned and agreed through above work permit or as deemed necessary by BYPL are enforced and complied all the time during activities carried out at height.

7. Reporting of Incidents / Dangerous Occurrences

7.1 In case of any accident occurs during the O&M activities undertaken by the Contractor thereby causing a dangerous occurrence or any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be sole responsibility of the Contractor to promptly inform the same to BYPL in prescribed form and also to all authorities envisaged under the applicable laws.

8. Suspension of Work

8.1 BYPL shall have the right at its sole discretion to suspend the work till compliance of safety norms, if in its opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and / or property, and / or equipments.

8.2 In such cases, the contractor shall be informed in writing about the nature of hazards and possible injury /accident and he shall comply to remove all shortcomings promptly. Decision of BYPL shall be conclusive and binding on the Contractor in such aspects.

8.3 The contractor shall not be entitled to damages / compensation for suspending of work due to safety reasons and the period of such stoppage of work will not be taken as an extension of time for completion of the facilities as per the work order and will not be the ground for waiver of levy of liquidated damages.

8.4 The contractor shall follow and comply with all safety Rules of BYPL, relevant provisions of applicable laws pertaining to the safety of workmen, employees plant and equipment as may be prescribed from time to time without any demur, protest or contest or reservation. In case of any inconformity between statutory requirement and safety rules of the BYPL referred above, the latter shall be binding on the contractor unless the statutory provisions are more stringent.

#### 9. OHS Appreciation Policy

9.1 If the contractor observes all the safety rules and codes, statutory laws and rules during the period of the contract awarded by the BYPL and no accident occurs then BYPL may consider the performance of the contractor and safety score card will be prepared. The best contractor will be appreciated by suitable "SAFETY AWARD" as per scheme as may be announced separately from time to time.

#### 10. Safety Motivational Scheme for Contractor Employee

10.1 All contractors must reward their employee monthly for best worker in term of complying safety norms. They should honour with a gift of Rs. 500/- (five Hundred) with commendation certificate to motivate others towards safety compliance. The record with photograph should kept with them & also to be submitted to BYPL safety department. Contractor may ask to BYPL safety people for their presence during awarding time.

10.2 All contractors have to observe safety day/ week on 4th March to 10th march every year with proper planning and record to create safety awareness inside their organization. A detail report of observing the same to be forwarded to safety department every year.

#### Guidelines for Penalty Policy Implementation

##### 11. Penalty:

##### 11.1 Penalty for No I-card:



A penalty of Rs. 500/- shall be levied on contractor for every incident whenever employees found without I-card / loss of I- card. This amount shall be deducted from the bill of the contractor on the recommendation of concern Engineer-In-charge.

#### 11.2 Penalty for Not providing manpower:

A penalty of Rs. 1000/- per person per day shall be levied on contractor for every incident whenever he will not provide manpower. This amount shall be deducted from the bill of the contractor on the recommendation of concern Engineer-In-charge.

#### 11.3 Penalty for Misconduct:

1) A penalty of Rs. 10000.00 shall be levied on contractor for the first incident of misconduct.

2) A penalty of Rs. 25000.00 shall be levied on contractor for the second incident of misconduct.

3) A penalty of Rs. 50000.00 shall be levied on contractor for the third incident of misconduct & termination of the contractor.

4) Depending upon the level of mal practice, Engineer In-Charge/FD head can take decision which will have on report of misconduct, the matter will be scrutinized at appropriate level and the complaint found genuine above Penalties shall be applicable.

#### 11.4 Penalty Policy on Safety Violation

Class	Type of Offense	Penalty Detail	Execution Channel
-------	-----------------	----------------	-------------------

A.	Not Wearing Safety Helmets Safety shoes/ Safety Goggles / Electrical insulating hand Gloves (Poor quality or damaged item means noncompliance)	# First Offence - Warning Note & Rs.2000/-	
----	--	--	--

		# Second Offence - Warning Note & Fine of Rs.5000/-	
--	--	---	--

		# Third Offence- Note of recommendation of the concerned workmen/ supervisors for termination of his job & Fine of Rs.15000/-	Recommendation by OHS-Representative/Division Head
--	--	---	--

Approval by Safety Head

Deduction by Finance & Account

B. Not wearing Full Body Harness/fall arresters while working at a height more than 1.8 meter or wherefrom a person may fall. Not using Safety Net to arrest falling objects and personnel. (Poor quality or damaged item means noncompliance) # First Offence -Warning Note & Fine of Rs.5000/-

# Second Offence - Warning Note for dismissal and a Fine of Rs.10000/-

# Third Offense - -Action for the concerned workman/ supervisor for termination of his job and a fine of Rs.25000/-  
Recommendation by OHS-Representative/Division Head,Approval by Safety Head,Deduction by Finance & Account

Not wearing Electrical Gloves/Electrical Safety Shoes/ Not using electrically safe tools and equipments. (Poor quality or damaged item means noncompliance) # First Offence -Warning Note & Fine of Rs.5000/-

# Second Offence - Warning Note for dismissal and a Fine of Rs.10000/-

# Third Offence -Action for the concerned workman/ supervisor for termination of his job and a fine of Rs.25000/-

C. Any other unsafe work practices or condition which is considered having potential for fatality or injury to personnel.# First Offence - Warning Note & Fine of Rs.10000/-

# Second Offence - Action for the concerned workmen/ supervisors for termination of his job and fine of Rs.20000/-  
Recommendation by OHS-Representative/Division Head

Approval by Safety Head

Deduction by Finance & Account

Notes:

# If there are 03 violations by an individual employee, services will be terminated.

# If there are 10 violations in one quarter, will be recommended for termination of contract order.

1. Total penalty shall be calculated by multiplying the number of safety violations and the penalty amount specified for such violations. (Example - If at first offence 3 persons are found working without safety helmet, the penalty would be  $3 \times 2000 = \text{Rs.}6000/-$ )

2. The amount of penalty can be increased or decreased based upon the seriousness of safety violations. The decision of recommending authority shall be final one.

3. Recommending authority shall fill the Annexure #1 based upon his factual observations and shall send it to Division Head and Safety Head who in turn shall either reject or approve it. If approved, he shall send it to Finance & Accounts for execution. Finance Accounts shall execute the penalty and confirm the same in the Annexure & shall send it back to Division Head and Safety Head.

4. Recommending Authority means all Division Head, Zonal Head, HODs, Site Safety officer / Supervisor, representatives from EHS and other personnel authorized jointly by O&M.
5. Division Head, Zonal Head and Safety Head may impose penalty for serious violations directly.
6. All penalties shall be imposed directly on the concerned contractors. No penalty shall be imposed on individuals.
7. Safety violations to be considered for Penalty are classified as A, B & C.

13. Guidelines for Safety Appreciation Policy Implementation

1. Recommending Authority shall write comments of his Appreciation in case of he observes that there is no any safety violations in either of A, B or C classes.
2. Recommending Authority shall send his Safety Appreciation Note in the format given as Annexure# 1 to Safety Head who in turn shall either approve or reject it and shall send it to Site Safety Officer for keeping in records.
3. Management will appreciate the Safe Contractors for their best performance towards safety norms based upon number of safety appreciation notes.
4. Every year best Safe Contractor shall be suitably awarded. The contractor shall be selected based upon the maximum numbers of approved safety appreciation notes.
5. Any contractor who has received any penalty for a particular year shall not be entitled for Safe Contractor's Award irrespective of number of safety appreciation notes he has received.
6. Site Safety Officer will maintain the contractor wise record of penalty & safety appreciation notes and declare the results latest by 28th February of every year for the performance of previous year.
7. BYPL Management shall present one Running Trophy with commendation certificate of safety excellence every year on the occasion of 4th to 11th March (National Safety Day) to the contractor, who qualified the safety standard criteria.

Appendix #1

BSES YAMUNA POER LIMITED

Safety Violation - Penalty Policy

Class Type of Offense Penalty Detail Execution Channel

A Not Wearing Safety Helmets Safety shoes/ Safety Goggles / Electrical insulating hand Gloves/ Not using electrically safe tools and equipments. (Poor quality or damaged item means noncompliance) First Offence  
Warning Note & Rs.2000/-

Second Offence

Warning Note & Fine of Rs.5000/-

Third Offence

Note of recommendation of the concerned workmen/ supervisors for termination of his job & Fine of Rs.15000/- "

Recommendation by EHS-Representative/Division Head/Zonal Head

" Approval by Safety Head

" Deduction by Finance & Account

B Not wearing Full Body Harness/fall arresters while working at a height more than 1.8 meter or wherefrom a person may fall.

Not using Safety Net to arrest falling objects and personnel.

(Poor quality or damaged item means noncompliance) First Offence

Warning Note & Fine of Rs.5000/-

Second Offence

Warning Note for dismissal and a Fine of Rs.10000/-

Third Offense

-Action for the concerned workman/ supervisor for termination of his job and a fine of Rs.25000/-

" Recommendation by EHS-Representative/Division Head/Zonal Head

" Approval by Safety Head

" Deduction by Finance & Account

C Any other unsafe work practices or condition which is considered having potential for fatality or injury to personnel. First Offence

Warning Note & Fine of Rs.10000/-

Second Offence

Action for the concerned workmen/ supervisors for termination of his job and fine of Rs.20000/-. "

Recommendation by EHS-Representative/Division Head/Zonal Head

" Approval by Safety Head

" Deduction by Finance & Account

D Fatal Accident due to Non compliance of safety norms 10 Lacs " Recommendation by Accident Enquiry committee

" Approval by Head (O&M)

" Deduction by Finance & Account

Notes:

1. Refer clause No. 14 for penalty policy implementation guidelines
2. Refer clause No. 15 for appreciation policy implementation guidelines.
3. If there are 03 violations by an individual employee, services will be terminated.
4. 10 violations per quarter will be recommended for black listing of contract order.

Annexure #1

BSES YAMUNA POWER LIMITED

(Name of Site)

Safety Appreciation / Violation Memo

DIVISION/Area: -----

Date & Time: -----

Name of Contractor: -----  
-----

Activity: -----

Name of Division Head: -----

Appreciation/Penalty Memo#:

S.N Safety Violation Details | Class(A/B/C) | No. of Violations | Penalty per Violation(Rs) | Penalty Amount(Rs) |  
Remarks

1

2

3

4

5



Safety Appreciation/Violation Note:

\_\_\_\_\_

Recommended By:

Name: ----- Designation: -----

Sign/Date: -----

Approved By (Division Head):

Name: ----- Designation: -----

Sign/Date: -----

Annexure #2

BSES YAMUNA POWER LIMITED

(Name of Site)

Monthly Status of PPE's / Tool Kit

Location/Area: -----

Date & Time: -----

Name of Contractor: -----

No. AMC Employee:

Lineman:

ALM:

Status of PPE's

S.N	Name of PPEs / Tool	No. Of PPEs	Condition	Remarks
1	Safety Helmet			
2	Safety Goggle			
3	Electrical Insulating Hand gloves			



- 4 Full Body Harness
- 5 Safety Shoes
- 6 Reflective Jacket

Signature / Date #####.

Annexure #3

BSES YAMUNA POWER LIMITED  
(Name of Site)

Monthly Status - Accident / Incident

Location/Area: -----

Date & Time: -----

Name of Contractor: -----

Table - 1: Summary of Accident /Incident / Near Miss / Dangerous Occurences / First Aid:

S.N	Type of Accident /Incident / Near Miss / Dangerous Occurences / First Aid	Person Injured	Brief Discription
1			
2			
3			
4			
5			

Table - 2: Learning from Incidents:

S.N	Brief Discription	Root Cause	Recommendation
1			
2			

3  
4  
5

Table - 3: Summary of Person Injured:

S.N Name of Employee|Emp.ID/Designation Type of Injury|Duration of Medical Rest date(from ..... to .....)

1  
2  
3  
4  
5

Table - 3 : Safety Inspections / Violation

S. No.	Date	Location	Discrepancies	Compliance
--------	------	----------	---------------	------------

1  
2  
3  
4  
5

Table - 4 : Health & Safety Complaints & Sugesstions :

S. No.	Date	Location	Complaints / Sugestion
--------	------	----------	------------------------

1  
2  
3  
4  
5

Measures to avoid recurrences for all above mentioned discrepancies (Attach relevant documents if required)

Signature / Date #####.





Annexure #4

BSES YAMUNA POWER LIMITED

(Name of Site)

Format - PPE's Receipt by workers

Division:

Name of Contractor: M/s Sanjay Power Projects Pvt. Ltd.

S.NO.	NAME	DESI.	Safety Helmet	Electrical Insulating Hand gloves	Full Body Harness	Safety	Shoes
			Safety Goggle	Reflective Jacket	SIGNATURE		

Signature of Contractor / Date#####.

**31.0) SECRECY CLAUSE:**

The technical information, drawing and other related documents forming part of order and the information obtained during the course of investigation under this order shall be the COMPANY's exclusive property and shall not be used for any other purpose except for the execution of the order. The technical information drawing, records and other document shall not be copied, transferred, or divulged and/or disclosed to third party in full/part, not misused in any form whatsoever except to the extent for the execution of this order. These technical information, drawing and other related documents shall be returned to the COMPANY with all approved copies and duplicates including drawing/plans as are prepared by the Contactor during the executions of this order, if any, immediately after they have been used for agreed purpose.

In the event of any breach of this provision, the contractor shall indemnify the COMPANY against any loss, cost or damage or claim by any party in respect of such breach.

**32.0) TERMINATION:**

Without prejudice to the rights and remedies available to BYPL under this orderBYPL reserves the absolute right to terminate this agreement giving one month notice to the contractor without assigning any reason whatsoever. Also, the contractor shall give one month notice in case it wants to terminate the order.



BSES YAMUNA POWER LTD.

**33.0) ACCEPTANCE:**

Vendor confirms to have gone through the Policy of BYPL on legal and ethical code required to be followed by vendors encapsulated in the #Vendor Code of Conduct# displayed on the official website of BYPL (www.bsesdelhi.com) also, which shall be treated as a part of the contract/PO/WO.

Vendor undertakes that he shall adhere to the Vendor code of Conduct and also agrees that any violation of the Vendor Code of Conduct shall be treated as breach of the contract/PO/WO.

In event of any such breach, irrespective of whether it causes any loss/damage, Purchaser (BYPL) shall have the right to recover loss/damage from Vendor.

The Contractor/Vendor hereby indemnifies and agrees to keep indemnified the Purchaser (BYPL) against any claim/litigation arising out of any violation of Vendor Code of Conduct by the Contractor/Vendor or its officers, agents & representatives etc.

Acceptance of the CONTRACT implies and includes acceptance of all terms and conditions enumerated in the CONTRACT in the technical specification and drawings made available to Contractor consisting of general conditions, detailed scope of work, detailed technical specification, detailed equipment drawing and Complete scope of work.

Contractor and Company contractual obligation are strictly limited to the terms set out in the CONTRACT. No amendments to the concluded CONTRACT shall be binding unless agreed to in writing for such amendment by both the parties.

**STAUTAORY COMPLIANCE**

The Contractor should obtain and must submit the following to Engineer-In-Charge before commencement of work and these shall renewed from time to time:

- a) An Electrical license issued by Govt.of Delhi.
- b) PF Code No. and all employees to have PF A/c No. under PF every Act, 1952.
- c) All employees to have a temporary or permanent ESI Card as per ESI Act.
- d) ESI Registration No.
- e) GSTIN no.
- f) PAN No.
- g) Work Contract Tax Registration Number.
- h) Labour License under Contract Labour Act (R & A) Act 1970

(All Engineer-in-charge responsible for execution of the job should obtain a copy of Labour License as per guidelines of HR department before start of the work by the contractor.)

The Contractor must follow:

- a) Third party Insurance Policy before start of work.
- b) To follow Minimum Wages Act prevailing in the state.
- c) The Salary/wages to all deployed manpower is to be distributed through ECS only into the bank accounts of all individuals and not later than 7th of succeeding month. In case of unavoidable circumstances the payment may be



**BSES YAMUNA POWER LTD.**

made through crossed cheques in the name of the individual and information of all such cases need to be submitted to HR(CMC)

- d) To maintain Wage- cum - Attendance Register.
- e) To maintain First Aid Box at Site.
- f) Latest P.F. and E.S.I. challans pertaining to the period in which work was undertaken along with a certificate mentioning that P.F. and E.S.I. applicable to all the employees has been deducted and deposited with the Authorities within the time limits specified under the respective Acts.
- g) Workman Compensation Policy.
- h) Labour license before start of work.
- i) It is mandatory to take Group personnel accident policy , (TABLE C) for all Contractor employees (minimum of Rs. 10 Lac). In case,if any accident occurs at site,the liability of the same shall be of contractor, there is no liability of BYPL in that case.The Contractor should obtain the above documents and submit the same to the Engineer-in-charge before commencement of work.

**SECTION-IV: BILL OF QUANTITY / PRICE FORMAT**

**PRICE FORMAT : Name of Scheme : Shifting of Electrical services from Old Yamuna Bridge to Delhi-U.P Border (Apsara Border) & Marginal Bundh Road and Flyover at Shastri Park Junction, Delhi. A) Scheme YV19SH1005**

	<b>LABOUR PART</b>	unit	Qty	Rates (without GST)	Total
1	RMU installation <b>3- Function</b>	EA	5		
2	<b>Testing and commissioning</b> comprising of Hi-pot test, primary injection, IR & mV Drop test for <b>3-Function RMU.</b>	EA	5		
3	Casting of <b>civil foundation</b> for each <b>3 Way-RMU.</b> It includes cement, sand, ballast (rodi)and labour.	EA	5		
4	Supply & Erection of <b>MS Frame for 3-Way RMUs.</b>	EA	5		
5	RMU installation <b>1-Function.</b>	EA	1		
6	<b>Testing and commissioning</b> comprising of Hi-pot test, primary injection, IR & mV Drop test, <b>1- Function RMU</b>	EA	1		
7	Casting of <b>civil foundation</b> for each <b>1-way RMU.</b> It includes cement, sand, ballast (rodi)and labour.	EA	1		
8	Supply & Erection of <b>MS Frame for 1-Way RMUs.</b>	EA	1		
9	RMU installation 4- Function.	EA	1		
10	Testing and commissioning comprising of Hi-pot test, primary injection, IR & mV Drop test for 4-Function RMU.	EA	1		
11	Casting of civil foundation for each 4-way RMU. It includes cement, sand, ballast (rodi)and labour	EA	1		
12	Supply & Erection of MS Frame for 4-Way RMUs.	EA	1		
13	Extra civil work for step-making (required for smooth operation/maintenance of RMU's)if the RMU is to be installed more than 300mm height from Ground Level	EA	7		
14	Transportation of RMU's and other materials from Main Store to Distt.Store or from Distt.Store to site, i/c.loading & unloading at both ends safely (a) One transport will be paid per site for New RMU along with other materials. (b) In case of transhipment of RMU from main store to district store and then from district store to site, two transport will be allowed.	EA	14		
15	Labour charges for digging of the trench of the required size including the backfilling with the excavated earth and ramming the same and disposing the surplus excavated material all complete. Payment shall be released as per actual depth excavated or as mentioned in drawing whichever is less. <b>Digging of cable trench in Dense carpeted bituminous roads/CC Road/Asphaltic Road for 11KV H.T. 3X150/300 sq.mm Single Circuit of size 400X1055 mm as per Drg.# 6 and Type A-2.</b>	M	6500		
16	Laying of under- ground HT. cable in trench ,docketing with bricks & sand as per BSES specifications, refilling the trench and ramming the surface & removal of malba if any, including supply of IInd class bricks and sand (Sand cushion min 75mm below and 75mm above the cable.Also a warning tape above 224 mm of the docket be laid.) and including watch and ward till charging of cable of size <b>3X150/300 sq.mm.11KV.Single Circuit,as per Drg.#6, Type A-2.</b>	M	5500		
17	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe .Laying by HDD Machine Moling.Drilling and laying. 110/140mm dia.	M	2000		
18	Supply of HDPE pipes as per IS 4984,PN 4 class PE 63 - 140mm dia.	M	2800		
19	Labour charges for laying of pipe in already excavated trench including all jointing materials and dressing and ramming of the bottom before laying of pipes. B Class GI Pipe 100mm dia.	M	200		
20	Laying of HT/LT cables through GI Pipe /RCC hume pipe. above 150 sqmm upto 300 sqmm.	M	3000		
21	Digging of joints pits as required, docketing with bricks and sand of the joint & refilling with loose earth and ramming the surface including removal malba. Brick and sand shall be supplied by the contractor	EA	55		

	LABOUR PART	unit	Qty	Rates (without GST)	Total
22	Digging of Test pit of the required size at site for identification of the cable alongwith refilling with loose earth and ramming the surface including removal of Malba. The volume of this shall be deducted from Item Labour charges for digging of this schedule(Only for those test pit which are lying on the cable digging route ). <b>For Dense Carpet/CC Portion/Asphaltic Road Portion.</b>	CUM	45		
23	Labour charges for digging of the trench of the required size including the backfilling with the excavated earth ramming the same and disposing the surplus excavated material all complete. Payment shall be released as per actual depth excavated or as mentioned in drawing whichever is less. <b>Digging of cable trench in Dense carpeted bituminous roads/CC Road/Asphaltic Road for 1.1KV LT 3.5X300 sq.mm Single /Double / Triple circuit of size 400X875 mm as per Drg.# 8,Type A-1.</b>	M	1400		
24	Labour charges for digging of the trench of the required size including the backfilling with the excavated earth ramming the same and disposing the surplus excavated material all complete. Payment shall be released as per actual depth excavated or as mentioned in drawing whichever is less. <b>Digging of cable trench in Dense carpeted bituminous roads/CC Road/Asphaltic Road for 1.1KV LT 3.5X150 sq.mm Single /Double / Triple circuit of size 400X875 mm as per Drg.# 9,Type A-1.</b>	M	1100		
25	Laying of under- ground LT cable in trench ,docketing with bricks & sand as per BSES specifications, refilling the trench and ramming the surface & removal of malba if any, including supply of IInd class bricks and sand (Sand cushion min 65mm below and 75mm above the cable. Also a warning tape above 224mm of the docket be laid ) and including watch and ward till charging of cable of size <b>3.5X300 sq.mm.Single Circuit,as per Drg.# 8,Type A-1.</b>	M	1400		
26	Laying of under- ground LT cable in trench ,docketing with bricks & sand as per BSES specifications, refilling the trench and ramming the surface & removal of malba if ny,including supply of IInd class bricks and sand (Sand cushion min 75mm below and 80mm above the cable. Also a warning tape above 300mm of the docket be laid ) and including watch and ward till charging of cable of size 3.5X150 sq.mm.Single rcuit,as per Drg.# 9,Type A-1.	M	1100		
27	Mounting of LT cables on pole,after passing through suitable size of GI pipe proper Clamping and proving and fixing wooden bush alongwith clamping of end box. Above Of size 150 sqmm /pole.(The length of cable to be mounted on pole should be excluded from the laying (length.)	M	1200		
28	Mounting of cables on pole,after passing through suitable size of GI pipe proper Clamping and proving and fixing wooden bush alongwith clamping of end box. 4 x 95 sqmm to 4 x 150 sqmm/pole	M	500		
29	High Voltage test of 11KV 3x300sq.mm cable - Testing Equipment to be provided by the contractor.	EA	55		
30	Fabrication work using MS steel ( for any type as per drawing, specification provided by BSES ) including all consumables i.e. welding rods, supplying and providing 2 coats of red oxide primer and one coat of aluminum paint, nuts, bolts and washers. All type frames,structure,clamps etc.Steel shall be provided by BSES	KG	1250		
31	Providing and Fabrications of wooden cleats for supporting HT cable from Transformer to H.T.Switchgear with suitable size of holes as required. (Material will be supplied by the contractor). Cleats with single hole for <b>HT cable</b>	EA	8		
32	Plugging of cable holes in S/Stn. Walls (all material will be supplied by the contractor to complete the job) 60CM x 30CM	EA	30		
33	Installation , testing and commissioning of following sizes including unpacking leveling grouting, coupling taping oil fillings & earth connection etc. as required 1st class bricks,cement and sand to be supplied by the contractor. 11 KV metering cubical.	EA	1		

	<b>LABOUR PART</b>	unit	Qty	Rates (without GST)	Total
34	Laying and connecting of 11KV cable of size 3x150 sq. mm. from HT switch gear to the transformer and LT single core cable of size 630 sq. mm. from TR to LT board including fixing the same by means of proper wooden cleats etc. as required (The work includes crimping of sockets earthing & taping etc. as req). For <b>315/400 KVA Transformer</b>	EA	1		
35	Installation , testing and commissioning of 11/0.433 KV distribution Transformer of following sizes on existing plinth including grouting of frames required on HT & LT side for cables as per BSES Design & practice. 315/400 KVA Transformer	EA	1		
36	Laying and connecting of LT single core cable of size 630 sq. mm. from TR to LT Main including fixing the same by means of proper wooden cleats etc. as required (The work includes crimping of sockets earthing & taping etc. as req). For 315/400 KVA P/M Transformer S/Stn.	EA	1		
37	Laying and connecting of 11KV cable of size 3x150 sq. mm. from HT switch gear to the transformer and LT single core cable of size 630 sq. mm. from TR to LT board including fixing the same by means of proper wooden cleats etc. as required (The work includes crimping of sockets earthing & taping etc. as req). For 315/400 KVA Transformer	EA	1		
38	Installation , testing and commissioning of 11/0.433 KV distribution transformer of following sizes on existing structure including jumpering of HT side and connecting the leads on LT side: 400 KVA on 2-pole structure any type.	EA	1		
39	Installation , testing and commissioning of 11/0.433 KV distribution transformer of following sizes on existing structure including jumpering of HT side and connecting the leads on LT side: 100 KVA Tr. On 2-pole structure	EA	1		
40	Laying and connecting of LT single core cable of size 300 sq. mm. from TR to LT Main including fixing the same by means of proper wooden cleats etc. as required (The work includes crimping of sockets earthing & taping etc. as req). For 100 KVA P/M Transformer S/Stn.	EA	1		
41	Making of masonry plinth for placing the transformer with 90cm height above the ground level and 30cm below ground complete with bricks, cement, badarpur in the ratio of 1:6 and duly plastered on all sides Plinth to be provided with 75mm PCC layer on top.	CUM	15		
42	Providing and Fabrications of wooden cleats for supporting LT S/C cable from transformer to LT board with suitable size of holes as required. (Material will be supplied by the contractor). Cleats with 4 holes	EA	2		
43	Installation , testing and commissioning of following sizes including unpacking leveling grouting, coupling taping oil fillings & earth connection etc. as required 1st class bricks, cement and sand to be supplied by the contractor. 11 KV metering cubical.	EA	1		
44	Mounting , testing and commissioning of following accessories on the existing structure of P/M S/Stn or I/D s/stns . By means of suitable nut, bolts & clamps etc. including mounting on necessary frames electrically interconnecting with each other after Crimping the sockets an <b>LT ACB 400/800 Amps.</b>	EA	12		
45	Mounting , testing and commissioning of following accessories on the existing structure of P/M S/Stn or I/D s/stns. By means of suitable nut, bolts & clamps etc. including mounting on necessary frames electrically interconnecting with each other after Crimping the sockets an <b>LT ACB 1250 Amps.</b>	EA	5		

	LABOUR PART	unit	Qty	Rates (without GST)	Total
46	Mounting , testing and commissioning of following accessories on the existing structure of P/M S/Stn or I/D s/stns. By means of suitable nut, bolts & clamps etc. including mounting on necessary frames electrically interconnecting with each other after Crimping the sockets an LT ACB 2000 Amps.	EA	3		
47	Making connections at where ever required (feeder pillars/service pillars/ LT panel etc.) with following size of socket including crimping of socket and complete armouring: <b>AL 300 sqmm sockets</b> (Sockets will be supplied by BSES)	EA	50		
48	Making connections at where ever required (feeder pillars/service pillars/ LT panel etc.) with following size of socket including crimping of socket and complete armouring: AL 150 sqmm sockets (Sockets will be supplied by BSES).	EA	80		
49	Making connections at where ever required (feeder pillars/service pillars/ LT panel etc.) with following size of socket including crimping of socket and complete armouring: AL 95 sqmm sockets .(Sockets will be supplied by BSES )	EA	25		
50	Making connections at where ever required (feeder pillars/service pillars/ LT panel etc.) with following size of socket including crimping of socket and complete armouring: AL 630 sqmm sockets (Sockets will be supplied by BSES)	EA	40		
51	Making <b>Cable End termination. Note:</b> End Termination kit will be provided by BSES as free supply.	EA	25		
52	Making <b>Straight through joint. Note:</b> St.Th.joint kit will be provided by BSES as free supply.	EA	85		
53	Supply & Installation of fire buckets filled with sand, including fabrication of frame/stand of suitable size, canopy, grouting on surfce or wall, painting of frame including necessary hardware and consumables. 3 bucket stand	SET	6		
54	Painting of nomenclature of size(s) as reqd. on FP/Service Pillar / LT Panel / HT Panel and LT ACBs etc. including supply of paint.rates are per alphabat	EA	750		
55	<b>Supply and fixing of wire mesh</b> fencing 2.5 mtr height with gate frame of 3 mtr x 2.5 mtr with complete material including painting eg angle,chain link,wire mesh and civil material etc complete as per specification & drawing of BSES.Angle iron size 50x50x6 mm & MS strip 50 x 3 mm,Wire mesh 1"x3" of 8 SWG wire to be used for wire-mesh with providing support at 1.25m distance.	SQM	250		
56	Earthing with <b>40mmX2.5mt.</b> ,GI pipe of B class with Masonary earth pit enclosure on top covered having locking watering arrangement with funnel I/C provision of salt charcoal as per IS 3043. (Resistance should be less than 1 ohm) Salt,charcoal, masonary material and top enclosure cover and <b>all the earthing material shall be provided by contractor.</b>	EA	45		
57	Supply of Route/Joint marker	EA	80		
58	Fixing of <b>route / joint marker</b> on cable routes by grouting with stone blast and coarse sand including supply of cement, stone ballast and sand.	EA	80		
59	<b>Optional price for Continuous Steel Barricading</b> of 1.2 M High including cost of all materials.40% quantity for selected location per meter Trench	M	3000		
60	Identification of cable and Puncturing of the identified cable at the time of shut down(Shut down shall be arranged by BYPL). The work includes providing of skilled man who will identify the cable and will ensure to get it punctured at the time of shut down. Necessary T&P such as heater, Clip on meter and cable puncturing equipment etc shall be provided by the contractor -----11 KV cable	EA	25		
61	Charges for providing tent, lighting arrangement and labour for supporting the jointer for making the 11/33/66 kv St.through/end termination box	EA	45		
62	<b>Erection of 36' PCC poles (11 Mtr)</b> ,i/c refilling,ramming of the foundation and including removal of malba & transportation of pole from stacking site within 1 Km.distance excluding Digging,Concreting,& Brick Padding.	EA	30		
63	Fixing of strut stay with clamps i/c.transp.of Pole from stacking site within one Km.excluding Digging,Concreting,& Brick Padding. For <b>LV pole.</b>	EA	30		



	<b>LABOUR PART</b>	unit	Qty	Rates (without GST)	Total
64	Excavation for erection of any kind of pole or strut or stay in <b>Dense Carpeted or C.C.</b> or Asphaltic portion.	CUM	110		
65	Installation of following after fixing on wall/slotted angle frame etc as required including connection through reinforced flexible conduit. The job shall be as per approval of Engineer In Charge and include supply of consumable like PVC bobbin, black lap, socket etc shall be supplied by the contractor and Angle iron split, nuts & bolts shall be supplied by BSES on free issue basis. - <b>Single Phase DB</b>	EA	5		
66	Installation of following after fixing on wall/slotted angle frame etc as required including connection through reinforced flexible conduit. The job shall be as per approval of Engineer In Charge and include supply of consumable like PVC bobbin, black lap, ocket etc shall be supplied by the contractor and Angle iron split, nuts & bolts shall be supplied by BSES on free issue basis. - <b>Three Phase DB</b>	EA	25		
67	Installation of Piercing connectors on LT AB cables at pole top height to make proper tap-off connections - Main cables size : 50-150 sqmm, Tap cables size : 6-35 sqmm	EA	180		
68	<b>Zebra painting</b> on any type of pole including supply of paints upto 1.03 M height from GL	EA	30		
69	<b>Concreting</b> with 1:2:4 mix complete in all respect	CUM	30		
70	Loading/Unloading/Transportation of <b>36' PCC</b> Poles from store to site or site to site. <b>Beyond one km. to 5 Kms.</b>	EA	30		
71	Loading/Unloading/Transportation of <b>36' PCC</b> Poles from one site to another site <b>Beyond 5 Km distance</b>	EA	30		
72	Stringing and sagging of the following LT AB cables, with help of proper tool i.e. pullies, cable drum jacks, pulling & crimping tool etc. - 3 cores of 150/120sqmm, 1 core of 70 sqmm Al conductor with XLPE insulation and messenger wire ( with or without one 16 sq.mm. additional core for lighting)	M	1100		
73	Earthing with 40mmX3mt long GI pipe of B class with Masonary earth pit enclosure on top covered having locking watering arrangement with funnel I/C provision of salt charcoal as per IS 3043. (Resistance should be less than 1 ohm) Salt,charcoal, masonary material and top enclosure cover and all the earthing material shall be provided by contractor	EA	12		
74	Laying of G.I strip from the main earth electrode upto the transformer body, neutral point, RMU, LT/HT Panel etc. including passing through suitable GI pipe clamping etc. wherever required and the proper end connections (supply of nuts, bolts, washers in the contractor scope) G.I strip of 25x6 sq.mm.	M	225		
75	Drawing of Multicore PVC/XLPE cable on poles supported with catenary wire including fixing of cleat/clamps etc. as required for supporting of cable/wire. <b>Upto 10 sq mm</b>	M	600		
76	Drawing of Multicore PVC/XLPE cable on poles supported with catenary wire including fixing of cleat/clamps etc. as required for supporting of cable/wire <b>above 10 sq.mm. to 25 sq mm</b>	M	550		
77	Supply of Bolts/ nuts, etc. including erection	KG	10		
78	Cleaning and clearing of malba after completion of work at site or removal of malba to carry out the work at site (This item is not applicable for removal of malba in digging and cable laying and Pole erection work )	CUM	35		
79	Dismantling of the following from kiosk/ indoor type. S/stn. Including their safe removal and stacking at tent site including loading and unloading . (the work also includes the removal of all the electric/earth connections). <b>11 KV RMU</b>	EA	7		
80	Dismantling from existing P/M S/Stn. The work includes their removal & stacking at tent site and loading unloading For 315/400/500/630 KVA Transformers	EA	1		
81	Dismantling from existing P/M S/Stn. The work includes their removal & stacking at tent site and loading unloading For 100 KVA Transformers	EA	1		
82	Dismantling from existing P/M S/Stn. The work includes their removal & stacking at tent site and loading unloading For Removal of all the angle Irons channel - frames/ clamps etc. on 2 pole structure	EA	2		

	<b>LABOUR PART</b>	unit	Qty	Rates (without GST)	Total
83	Dismantling of the following from kiosk/ indoor type. S/stn. Including their safe removal and stacking at tent site including loading and unloading . (the work also includes the removal of all the electric/earth connections). 11 KV single panel	EA	1		
84	Dismantling from existing P/M S/Stn or I/D s/stn. The work includes their removal & stacking at tent site and loading unloading <b>For LT ACB of all ratings.</b>	EA	20		
85	Dismantling of - <b>Single Phase DB complete as required.</b>	EA	5		
86	Dismantling of - <b>Three Phase DB complete as required.</b>	EA	25		
87	Dismantling of Piercing connectors on LT AB cables at pole top height to make proper tapoff connections - Main cables size : 50-150 sqmm, Tap cables size : 50-150 sqmm	EA	110		
88	Dismantling of Eye Hook/Dead end clamp or any type of hook or clamp used for AB Cable erection.	EA	30		
89	Dismantling of the following LT AB cables, with help of proper tool i.e. pullies, cable drum jacks, pulling & crimping tool etc. - 3 cores of 95 sqmm, 1 core of 50 sqmm Al conductor with XLPE insulation and messenger wire ( with or without one 16 sq.mm. additional core for lighting)	M	500		
90	Dismantling and demolishing concrete work for all types of structure at all levels including stacking of structure at all levels including stacking of serviceable material, cutting reinforcement, labour, equipment, safety precautions, all complete as per specification, drawing and instruction of engineer. - <b>Plain cement concrete of all grades</b>	CUM	18		
91	Dismantling from existing P/M S/Stn. The work includes their removal & stacking at tent site and loading unloading <b>For Taking down of LT feeder with cable end box and GI pipes</b>	EA	2		
92	Disconnection or Connection of 11KV XLPE Cable of following sizes: <b>3cX 300 sq.mm.</b>	EA	48		
93	Disconnection or connection of LT cable of following sizes : <b>LT Cable 3.5cx 300 sq. mm</b>	EA	40		
94	Dismantling of poles of following sizes after digging the pit and taking out the pole and stacking the pole at a proper place in safe positions and refilling the pit with loose earth and ramming including removal of Malba. <b>PCC/RCC 36' Long.</b>	EA	30		
95	Dismantling of conductor of the following sizes from the O/H. line recoiling of the conductor and stacking the same at tent site. <b>All sizes of Earth Wire or Conductor below the size of Dog conductor.</b>	M	1401		
96	Removal of all hardware fitting & insulators etc. from all sizes of poles & stacking the material at tent site.(Rates are for each Pole). <b>HT Pole.</b>	EA	30		
97	Transportation of material by hand-cart	TRP	100		
98	Transportation of Electrical equipments or any any kind of materials from store to site or from site to site including loading and unloading at both ends by using T & P such as Tripod/cranes -> By Full body truck load (9T capacity). Note:- Above item will be selected ensuring optimum utilization of the approved rates.	TRP	20		
99	Transportation of Electrical equipments or any any kind of materials from store to site or from site to site including loading and unloading at both ends by using T & P such as Tripod/cranes -> <b>By Half body Truck.</b> Note:- Above item will be selected ensuring optimum utilization of the approved rates.	TRP	25		
100	Transportation of Electrical equipments or any any kind of materials from store to site or from site to site including loading and unloading at both ends by manually -> By Full body truck load (9T capacity). Note:- Above item will be selected ensuring optimum utilization of the approved rates.	TRP	15		
101	Transportation of Electrical equipments or any any kind of materials from store to site or from site to site including loading and unloading at both ends by manually -> By Half body Truck. Note:- Above item will be selected ensuring optimum utilization of the approved rates.	TRP	35		
102	Transportation of empty cable drum from site to designated store anywhere in Delhi.For 4/5 nos Wooden Drum	TRP	15		
			a	Total	
			b	GST @18%	
			c	Grand Total (a+b)	

	LABOUR PART	unit	Qty	Rates (without GST)	Total
<b>B) Scheme EE19SH1018 (Labour part)</b>					
1	Transportation of electrical equipment i.e.CB,CT,PT,ISOLATORS,LA,CABLE DRUMS etc. from store/any site in Delhi to site of work in Delhi including loading and unloading at both ends by using T & P such as Tripod/cranes etc.(Considering max lead of 50KM)	TRP	70		
2	Transportation of Empty cable drum from site to site or from site to store any where in Union territory of Delhi.	TRP	70		
3	Transportation of material by hand-cart	TRP	140		
4	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated . For Ordinary Soil.	CUM	800		
5	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated . For Footpath/tile/Rajasthani Stone/Brick work.	CUM	1250		
6	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated . For Ordinary Bituminous/C.C.Road.	CUM	1000		
7	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated . For Dense Carpeted bituminous Road.	CUM	800		
8	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated. For Semi Rocky Soil	CUM	800		
9	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated. For Rocky Soil	CUM	600		
10	Removal of Malba including Loading / Unloading on own vehicle. The payment shall be restricted to the quantity of sand laid.	CUM	2200		
11	Providing and Laying Sand cushioning for cable route as per BRPL/BYPL specification and drawing.	CUM	2630		
12	Digging of joint pit suitable for 33/66 KV cable joint box and covering the joint box with sand and providing protection as per BYPL/BRPL design. For Footpath/ tile/ Rajasthani Stone / Brick Works	Cum	150		
13	Digging of joint pit suitable for 33/66 KV cable joint box and covering the joint box with sand and providing protection as per BYPL/BRPL design. For Dense carpeted bituminous road.	Cum	93		
14	Digging of joint pit suitable for 33/66 KV cable joint box and covering the joint box with sand and providing protection as per BYPL/BRPL design. For Hard Rocky Soil	Cum	100		
15	Laying of under ground cable in trench ,covering with RCC cable cover, covering with sand ,Sand cushion will be min 75mm below and 75mm above the cable, fixing of cable identification tags (9" X 4") at every 30 Mtrs, Laying of warning tape above 250mm of the docket, refilling the trench and ramming the surface & removal of malba if any, including watch and ward till charging of cable ( This activity includes only labour jobs ) for 33 KV cable Running Mtr	M	15800		
16	Supply and fixing of Cable Route/Joint Marker as per approved drawing. For 33/66 KV cables.	EA	492		
17	Charges for Hi pot test - Testing equipment to be provided by the contractor. For 33 KV cables	EA	11		
18	Charges for providing continuous steel barricade 1.2 Mtr high including cost of all material plant consumables transport and labour for shifting placing painting and regular maintenance.	M	6000		
19	Identification of cable and Puncturing of the identified cable at the time of shut down(Shut down shall be arranged by BYPL). The work includes providing of skilled man who will identify the cable and will ensure to get it punctured at the time of shut down. Necessary T&P such as heater, Clip on meter and cable puncturing equipment etc shall be provided by the contractor. -----66 KV cable, 33KV,	EA	22		
20	Phasing of cables before commissioning. The work includes disconnection/reconnection of cable for matching the phase sequence of cables including providing skilled workmen at both ends. For 66KV/33KV/11KV cables	Per Ckt.	11		
21	Supply of HDPE pipes as per IS 4984,PN 4 class PE 63 - 200mm dia	M	3000		
22	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe .Laying by HDD Machine Moling. Drilling and laying. 200mm dia.	M	2500		

	<b>LABOUR PART</b>	unit	Qty	Rates (without GST)	Total
23	<b>Laying of HDPE pipe</b> for crossing small Nallas in the cable route or in the existing trenches	M	500		
24	Charges for carrying out <b>Route survey</b> and identification of underground utilities of various civic agencies before/ during execution of scheme involving cable laying work. Route length will be considered for payment. Route length will be specifically verified by DGM.	M	6000		
25	Charges for providing <b>tent, lighting arrangement</b> and labour for supporting the jointer for making the 11/33/66 kv st.through/end termination box	EA	60		
26	Watch & Ward	DAY	120		
27	Supply of <b>RCC Cable protection cover</b> as per BYPL/BRPL specification & drawing. (50 Thick 550 mm wide), 2 Feet long	Nos.	13700		
28	Supply of <b>warning tape</b> per BSES Design specification (Width=150mm, Thickness=0.3u)	M	8223		
		a1	Grand Total		
		b1	GST @18%		
		c1	Total(a1+b1)		

**ANNEXURE 1**

To

Head of Department  
Contracts & Material Deptt.  
BSES Yamuna Power Limited  
III Floor, 'A' Block  
Shakti Kiran Building  
Karkardooma  
New Delhi-110032  
Sir,

1 We understand that BYPL is desirous of carrying out ..... in it's licensed distribution network area in Delhi

2 If our Bid is accepted, we under take to provide our services as per completion schedule mentioned in the tender document from the date of award of work order/letter of intent.

3 If our Bid is accepted, we will furnish a performance bank guarantee as mentioned in the RFQ for due performance of the Contract in accordance with the Terms and Conditions.

4 We agree to abide by this Bid for a period of 120 days from the due date of bid submission and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

5 Unless and until Letter of Intent is issued, this Bid, together with your written acceptance there of, shall constitute a binding contract between us.

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

7 There is provision for Resolution of Disputes under this Contract, in accordance with the Laws and Jurisdiction of Contract.

Dated this..... day of..... 2019

Signature..... In the capacity of .....

.....duly authorized to sign for and on behalf of

(IN BLOCK CAPITALS) .....

**ANNEXURE 2**

PROFORMA OF CONTRACT PERFORMANCE BANK GUARANTEE

(TO BE ISSUED ON RS 100/- STAMP PAPER)

Bank Guarantee No.

Place:

Date:

To

BSES Yamuna Power Limited

Whereas BSES YAMUNA POWER LTD (hereinafter referred to as the "Purchaser", which expression shall unless repugnant to the context or meaning thereof include its successors, administrators and assigns) has awarded to M/s.. with its Registered/ Head Office at

(hereinafter referred to as the "Supplier" which expression shall unless repugnant to the context or meaning thereof, include its successors administrators, executors and assigns), a contract no. dated (the Contract);

And whereas the value of the Contract is Rs. ( The Contract Value).

And whereas it is a condition of the Contract that the Supplier shall provide a Performance Bank Guarantee for the due and faithful performance of the entire Contract for a sum equivalent to - % of the Contract Value to the Purchaser on or before

And whereas the Bank under instructions from the Supplier has agreed to guarantee dIe due performance of the Contract.

Now it is agreed as follows:

1. we (Name of the Bank) having its Head Office at

(hereinafter referred to as the Bank, which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) 5hall indemnify and keep indemnified the Purchaser for, and guarantee and undertake to pay to the Purchaser immediately on written demand, a sum equivalent to % of the Contract Value

as aforesaid at any time upto (day/month/year) without any demur, reservation,

contest, recourse or protest and/or without any reference to the Supplier, against all losses, damages, costs and expenses that may be caused to or suffered by the Purchaser by reason of any default on the pall of the Supplier in performing and observing any and allthe terms and conditions of the Contract or breach on the part if the Supplier of terms or conditions of the Contract.



BSES YAMUNA POWER LTD.

2. The demand shall consist only of an original letter issued by Purchaser stating that the Supplier has failed to fulfill its obligations under the Contract. Such demand made by the Purchaser on the Bank shall be conclusive and binding notwithstanding any difference or dispute between the Purchaser and the Supplier or any difference or dispute pending before any Court, Tribunal, Arbitrator or any other authority.

3. The Bank undertakes not to revoke this guarantee during its currency without previous written consent of the Purchaser and further agrees that the guarantee herein contained shall continue to be enforceable during the period that would be taken for satisfactory performance and fulfillment in all respects of the Contract or in the event of any dispute between the Purchaser and Supplier until the dispute is settled (provided that the claim/ demand under this guarantee is lodged /referred during the currency of this guarantee) or till the Purchaser discharges this guarantee whichever is earlier.

4. The Purchaser shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee from time to time to extend the time for performance of the Contract by the Supplier. The Purchaser shall have the fullest liberty, without affecting the liability of the Bank under this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Supplier, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract. or any other course or remedy or security available to the Purchaser. The Bank shall not be released of its obligations under these presents by any exercise by the Purchaser of its liberty with reference: to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Purchaser or any other indulgence shown by the Purchaser of by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the Bank.

5. The Bank agrees that the Purchaser and its option shall be entitled to enforce this guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Supplier and notwithstanding any security or other guarantee that the Purchaser may have in relation to the Supplier's liabilities.

6. Notwithstanding anything contained hereinabove the liability of the Bank under this guarantee is restricted to a sum equivalent to % of the Contract Value ie. Rs.(Rupees) and it shall remain in force upto and including . Unless a demand to enforce a claim under this guarantee is made against the Bank within 3 months from the the above date of expiry i.e. up to all the rights of the Purchaser under the said guarantee shall be forfeited and the Bank shall be released and discharged from all liabilities thereafter.

7. This Performance Bank Guarantee shall be governed by the laws of India.

Dated this Witness

day of 2019 at

1. For Bank

2. Signature Name Power of Attorney No:

Banker's Seal

**ANNEXURE -3**

**FORMAT FOR EMD BANK GUARANTEE**

*(To be issued in a Non Judicial Stamp Paper of Rs.100/-purchased in the name of the bank)*

Whereas [*name of the Bidder*] (herein after called the "Bidder") has submitted its bid dated [*date of submission of bid*] for the carrying out of [*name and/or description of the Job*] (here after called the "Bid").

KNOW ALL PEOPLE by these presents that WE [*name of bank*] at [*Branch Name and address*],having our registered office at[*address of the registered office of the bank*](herein after called the "Bank"),are bound unto BSES Yamuna Power Ltd., with its Corporate Office at BSES Shakti Kiran Building, Karkardooma, Delhi -110032, (herein after called —the "Purchaser")in the sum of Rs. ....../- (Rupees .....only) for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents.

Sealed with the Common Seal of the said Bank this\_\_\_\_\_ day of\_\_\_\_\_ 2019

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, having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity:
  - (a) Fails or refuses to execute the Contract Form, if required; or
  - (b) Fails or refuses to furnish the performance security, In accordance with the Instructions to Bidders/ Terms and Conditions;

We undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that is its demand the purchaser will note that amount claimed by it is due to it, owing to the occurrence of one or both of the two condition(s), specifying the occurred condition or condition(s).

This guarantee will remain in force up to and including Ninety (90) days after the due date of submission bid, and any demand in respect thereof should reach the Bank not later than the above date.

**Beneficiary's bank detail with IFSC Code:**

1. Name of the Bank: Axis Bank Limited
2. Branch Name & Full Address: C-58, Basement & GroundFloor, Preet Vihar, Main Vikas Marg, New Delhi 110092
3. Branch Code: 055
4. Bank Account No: 911020005246567
5. IFSC Code: UTIB0000055

(Stamp & signature of the bank)

**Signature of the witness**



**ANNEXURE -4**

**ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT**

(To be signed and stamped by the bidder prior to participation in the auction event)

BYPL intends to use the reverse auction through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as techno commercial qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid event:

1. BYPL shall provide the user id and password to the authorized representative of the bidder. (Authorization letter in lieu of the same be submitted along with the signed and stamped acceptance form)
2. BYPL will make every effort to make the bid process transparent. However, the award decision by BYPL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of BYPL, bid process, bid technology, bid documentation and bid details.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs; power failure or any other reason shall not be the responsibility of BYPL.
6. In case of intranet medium, BYPL shall provide the infrastructure to bidders, further, BYPL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case of an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be out rightly rejected by BYPL.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR at BYPL site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder. No further communication will be there.
11. No requests for time extension of the auction event shall be considered by BYPL.
12. The original price bids of the bidders shall be reduced on pro-data basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at contract amount.

Signature & seal of the Bidder

**ANNEXURE 5**  
**VENDER CODE OF CONDUCT**

Vendor confirms to have gone through the Policy of BYPL on legal and ethical code required to be followed by vendors encapsulated in the (Vendor Code of Conduct) displayed on the official website of BYPL ([www.bsesdelhi.com](http://www.bsesdelhi.com)) also, which shall be treated as a part of the contract/PO/WO.

Vendor undertakes that he shall adhere to the Vendor code of Conduct and also agrees that any violation of the Vendor Code of Conduct shall be treated as breach of the contract/PO/WO.

In event of any such breach, irrespective of whether it causes any loss/damage, Purchaser (BYPL) shall have the right to recover loss/damage from Vendor.

The Contractor/Vendor hereby indemnifies and agrees to keep indemnified the Purchaser (BYPL) against any claim/litigation arising out of any violation of Vendor Code of Conduct by the Contractor/Vendor or its officers, agents & representatives etc

**Communication Details**

**Bidder should furnish the below details for future communication:-**

<b><u>GENERAL INFORMATION</u></b>	
NAME OF COMPANY	
POSTAL ADDRESS	

<b>FOR TECHNICAL QUERY:</b>		
CONTACT PERSON & DESIGNATION	NAME	DESIGNATION
E-MAIL	MOBILE NO	TELEPHONE NO

<b>FOR COMMERCIAL QUERY:</b>		
CONTACT PERSON & DESIGNATION	NAME	DESIGNATION
E-MAIL	MOBILE NO	TELEPHONE NO

check list			
S. No.		Name of Bidder	Page No
1	Cover Letter	Attached/Not attached	
2	Draft of Rs 1180/-	YES/NO	
3	The Contractor must have an average annual turn over of Rs. 2 crore in last 3 year.(Turn over Certificate of last 3 years to be certified by a Chartered Accountant must be submitted along with Techno-commercial bid).	YES/NO	
a)	FY-2018-2019 (Amount/Certified Certificate)	Attached/Not attached (Rs/Cr)	
b)	FY-2017-2018 (Amount/Certified Certificate)	Attached/Not attached (Rs/Cr)	
c)	FY-2016-2017 (Amount/Certified Certificate)	Attached/Not attached (Rs/Cr)	
4	Solvency of an amount of Rs 50Lacs	Attached/Not attached (Rs/Cr)	
5	The Contractor must have a valid Electrical Licence to work in Delhi NCR.(Copy of valid Electrical Licence need to be submitted along with Techno-Commercial bid)	YES/NO (Validity date)	
6	Acceptance for the Scope of Work as per Tender Document	YES/NO	
7	Acceptance for Commercial Terms & Conditions as per Tender Document	YES/NO	
8	Signed copy of Technical Specification as per Tender Document	YES/NO	
9	Acceptance for Vendor code of conduct as per Tender Document	YES/NO	
10	Bidder should have Pan no. & should fulfill all statutory compliances like PF, ESI registration	YES/NO	
11	Firms who are debarred/ blacklisted in other utilities in india will not be considered(self certify document on letter head to be attached )	YES/NO	
12	Experience details with credentials	YES/NO	
13	organization chart of the company	YES/NO	
14	memoranda & articles of association of the company	YES/NO	
15	Details of banker & cash credit limit		
16	work performance certificate	YES/NO	
a)	FY-2018-2019 (Work Order / Performance Certificate)Rs./lac.	WO attached/Not attached (Rs/lac) PC attached/Not attached (Rs/lac)	
b)	FY-2017-2018 (Work Order / Performance Certificate)Rs./lac.	WO attached/Not attached (Rs/lac) PC attached/Not attached (Rs/lac)	
c)	FY-2016-2017 (Work Order / Performance Certificate)Rs./lac.	WO attached/Not attached (Rs/lac) PC attached/Not attached (Rs/lac)	
d)	FY-2015-2016 (Work Order / Performance Certificate)Rs./lac.	WO attached/Not attached (Rs/lac) PC attached/Not attached (Rs/lac)	



**BSES YAMUNA POWER LTD.**

e)	FY-2014-2015 (Work Order / Performance Certificate)Rs./lac.	WO attached/Not attached (Rs/lac) PC attached/Not attached (Rs/lac)	
17	Performance Bank gaurantee	YES/NO	
18	BID form	YES/NO	
19	EMD amount- 4 lakh Rs	YES/NO	
20	Communication details	YES/NO	

**Please mentioned the page no .& document attached accordingly**

**SECTION-V**

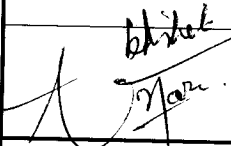
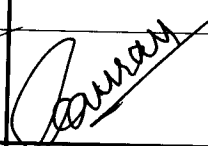
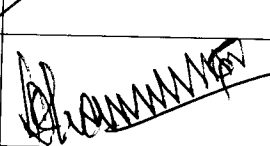
**TECHNICAL SPECIFICATIONS**

**BSES**

SP-LHTC-80-R0

TECHNICAL SPECIFICATION FOR CABLE LAYING

**TECHNICAL SPECIFICATION  
FOR  
CABLE LAYING OF 11 KV, 33KV AND  
66 KV**

Prepared by	Reviewed by	Approved by	Rev	00
			Date	11 <sup>th</sup> May 2016
AH	GS	DS	Page	1 of 44

**TECHNICAL SPECIFICATION FOR CABLE LAYING****INDEX**

1.1	References .....	3
1.2	Cable laying .....	4
1.3	Jointing of cables .....	32
1.4	Back Filling Trenches and Temporary Reinstatement .....	36
1.5	Permanent Reinstatement of Public Road, foot path & ground in private property .....	37
1.6	Identification.....	38
1.7	Cable Route Markers.....	38
1.8	Cable supports / Clamps.....	38
1.9	Installation of Cables in tunnels / basement / below the panels.....	39
1.10	Cable Protection at overhead Towers or Poles .....	40
1.11	Sun Shades.....	41
1.12	Route Plan.....	41
1.13	Site Facilities to be maintained by the Contractor.....	42
1.14	Testing.....	43



**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.1 REFERENCES**

- i) IS 1255: Code of practice for installation and maintenance of power cable up to and including 33kV rating.
- ii) IS 1554: PVC Insulated Electrical Cables upto 11KV
- iii) IS 2274: Code of Practice for electrical wiring installation – system voltage exceeding 650V
- iv) IS 7098 Part II: Cross linked Polyethylene Insulated PVC sheathed cables for working voltages from 3.3KV up to and including 33KV
- v) IS 7098 Part III: Cross linked Polyethylene Insulated PVC sheathed cables for working voltages from 66KV up to and including 220KV
- vi) IS 5820: Specification of precast concrete Cable cover.
- vii) Indian Electricity Rules 1956.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.2 CABLE LAYING****1.2.1 SELECTION OF THE ROUTE**

The cable route selection shall be done by the concerned supervising engineer by first conducting route survey and selecting a route along with contractor keeping followings in mind-

- i) The side of road, which presents the least obstacles and the fewest roadways crossings.
- ii) The future consumers and existing cables in the route may influence the cable route.
- iii) Railway, road crossings, MCD and other government agencies may also influence in selection of cable route.
- iv) Plans for future building projects should be considered.

The route shall be as far as possible away from parallel running gas, water pipes and telephone/telecommunication cables.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.2.2 CLEARANCES**

The desired minimum clearances are as follows –

- i) Power cable to power cable – A minimum clearance equal to diameter shall be maintained. Trench drawings shall be referred to for guidance.
- ii) Power Cable to control cables – 0.2 M
- iii) Power cable to communication cable – 0.3M
- iv) Power cable to gas/water main – 0.3 M

**1.2.3 DEPTH OF CABLE LAYING**

The desired minimum depth of laying from ground surface to the top of cable shall be

- i) 650 / 1100V grade XLPE Cables – 75 cm
- ii) 6.35 / 11KV grade XLPE Cables – 90 cm
- iii) Low voltage and Control cable - 75 cm
- iv) 19 / 33KV grade XLPE Cables - 1.05 M
- v) 38 / 66KV grade XLPE Cables - 1.20 M
- vi) Cables at Road crossing - 1.0 M (min)
- vii) Cables at railways level crossings (measured from bottom of sleepers to the top of Pipe) - 1.0 M (min)

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

Whenever there is any obstacle at the laying depth, the cable should be lowered/ raised to cross the obstacle. However variation in the depth is to be approved by BSES. The Contractor shall provide the same in deviation report.

**1.2.4 WIDTH OF CABLE TRENCHES**

The width and depth of Cable Trenches shall depend upon number of circuits and Voltage Grade. Drawings of this specification are shown in the document itself.

**1.2.5 BENDING RADIUS OF CABLES**

While pulling of the Cable from the drum or during laying following minimum bending radius shall be maintained so that the cable, in particular the insulation does not get damaged.

**i) Single Core Cables (PVC & XLPE)**

- a) Up to 11KV grade – 15 X D
- b) Above 11KV grade - 20 X D

**ii) Multi Core Cables (PVC & XLPE)**

- a) Up to 1.1KV grade - 12 X D
- b) Above 1.1KV grade – 15 X D

Where 'D' is overall diameter of the cable

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.2.6 MAXIMUM PERMISSIBLE TENSILE STRENGTH FOR CABLES**

i) For cables pulled with Stocking

a) PVC and XLPE SWA Armoured cables  $P = 30 \times D$

b) PVC and XLPE AWA Armoured cables  $P = 20 \times D$

Where P= pulling force in Kgm, D= Diameter of Cable in mm

ii) For Cables pulled by Cable eyes

a) Aluminium conductor –  $30 \text{ N/mm}^2 = 3 \text{ Kg/sq. mm}$

b) Copper conductors -  $50 \text{ N/mm}^2 = 5 \text{ Kg/sq. mm}$

Permissible force is calculated by multiplying the above values by cross sectional area (CSA) of conductor of each core and then number of cores.

**1.2.7 METHODS OF LAYING**

- i) Cables shall be laid in direct in ground, in trenches excavated therein and shall be protected with covers as given in the drawing. Cables shall also be drawn into pipes of ducts or laid in the formed trenches

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

or troughs or on racks or supported in trays or cleats as required by the site exigencies. Where the cables are laid in the formed trenches, the installation shall include removal and replacement of the trench covers and the provision of temporary protective covers on the trenches where they cross the access ways.

- ii) HDPE (200 mm) or RCC ducts shall be used where cable cross roads and railways tracks. Spare ducts for future extensions should be provided. Spare duct should be sealed off. Buried ducts or ducting blocks shall project into footpath or up to the edge of road, where there is no footpath, to permit smooth entry of cable without undue bending. The diameter of the cable conduit or pipe or duct should be at least 1.5 times the outer diameter of the cable. Angular alignment of the duct across road crossings shall be predetermined to maintain safe bending radius when direction of cable trench changes before or after the road.
- iii) The contractor shall lay cable by horizontal direct drilling (HDD) in main roads and highway with heavy traffic, passage to public property where excavation is not possible. Contractor shall take approval for laying of cable by means of HDD wherever required from the supervising engineer. The cable laid by HDD shall be minimized so that it doesn't exceed by 12% of total route length. This is to avoid De-rating of Cables.

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

- iv) Unless approved by BSES, the contractor shall lay the cables, direct in ground, in single layer. The cables shall be laid with the pre-determined and approved cable route.
- v) Spacing shall be maintained uniformly between the cables all along the length including the bends, as approved by BSES. To maintain the spacing, suitable non-metallic formers shall be placed uniformly with spacing not exceeding 5 meters. Every bend shall have at least one spacer.
- vi) 75 mm of the sand bed shall be placed at the bottom of cable trench.
- vii) After the cables have been laid the trench shall be filled with the sand and shall be well rammed to a level not less than 75 mm above the top of the cables all throughout the route.
- viii) To protect the cables against external mechanical damage, which may be caused by other agencies, the cable shall be protected by suitable cover.(for drawing of RCC cable cover refer annexure VI). The type of the covers shall be as under
  - a) 1.1KV Cables – Single layer of brick thickness not less than 75 mm ( 3 inch)
  - b) 11KV Cables – sand stone of thickness not less than 75mm (3 inch).

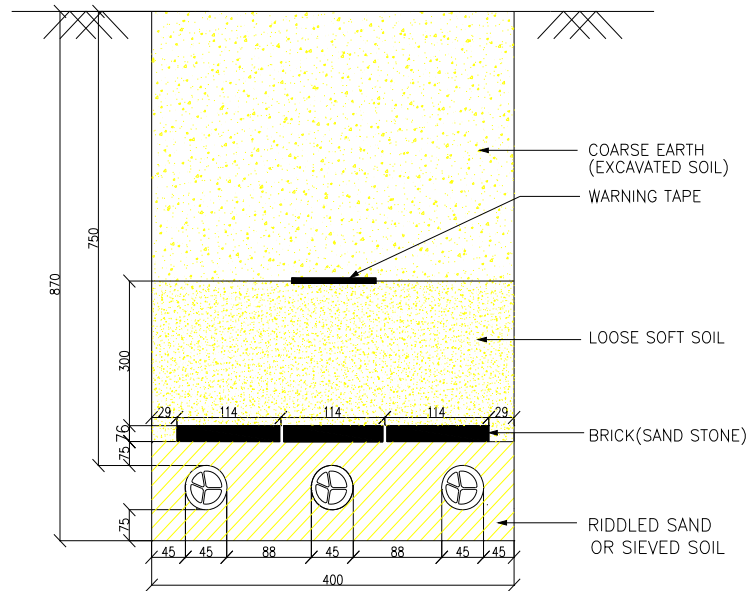
**TECHNICAL SPECIFICATION FOR CABLE LAYING**

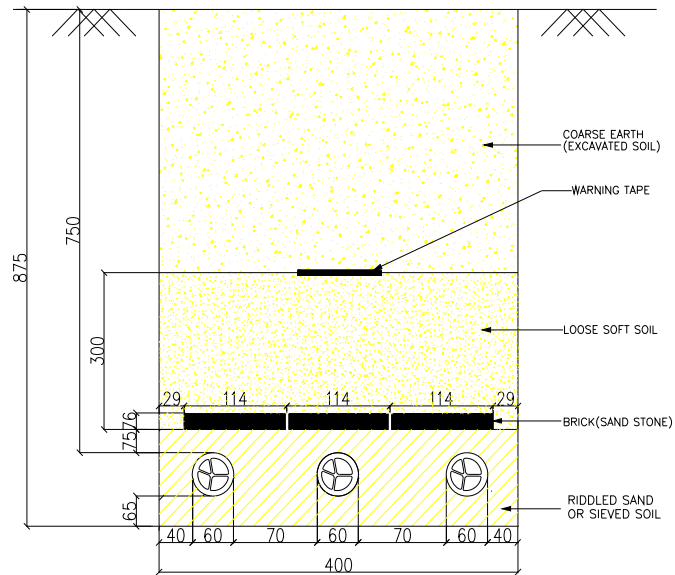
- c) 33KV Cables shall be protected by reinforced concrete cover of width 300 mm as per attached drawing with thickness not less than 50mm.
- d) 66KV Cables shall be protected by reinforced concrete cover as per attached drawing with thickness not less than 50mm.

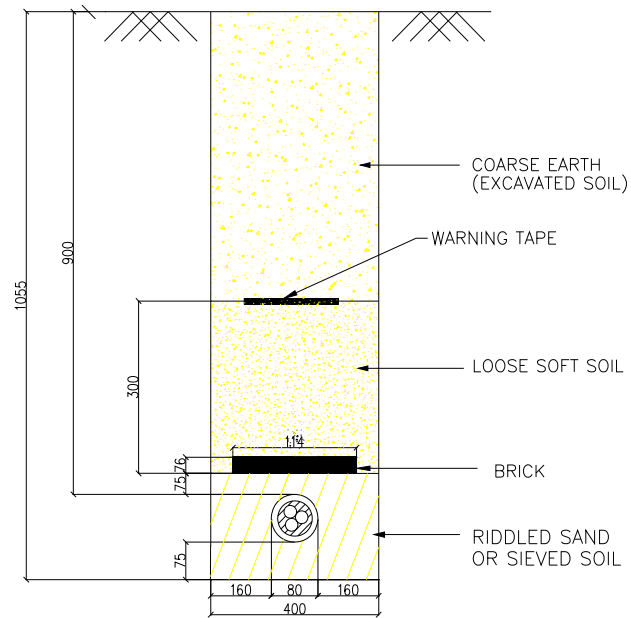
The RCC cable cover shall be embossed as “BYPL 66/33/11 KV CABLE” whichever is applicable.

- ix) Back fill to be filled up to 75mm and the warning tape shall be installed continuously. The tape shall be yellow in colour with Black / Red lettering of minimum 20mm height. The approved warning message shall be written in English and Hindi/ local language. The minimum thickness and width of the tape should be 300 microns and 150 mm respectively.
- x) The trench shall be filled-up by soft soil (300mm) and Excavated soil as indicated in drawings.



**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.1 – 1.1kV, 150sqmm Buried Cable**

**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.2 – 1.1kV, 300sqmm Buried Cable**

**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.3 – 11kV Buried Cable for Single Circuit**

## TECHNICAL SPECIFICATION FOR CABLE LAYING

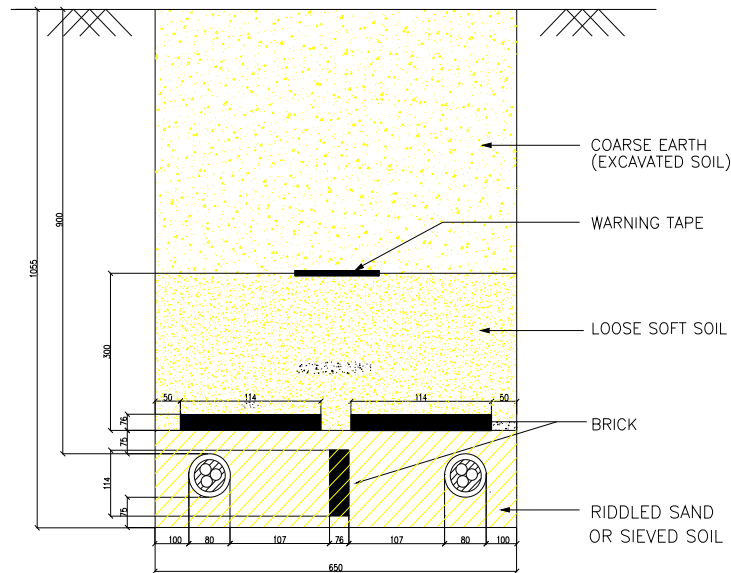
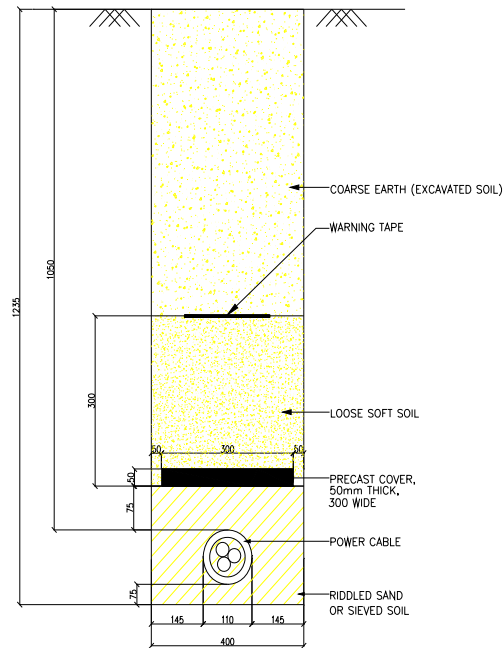
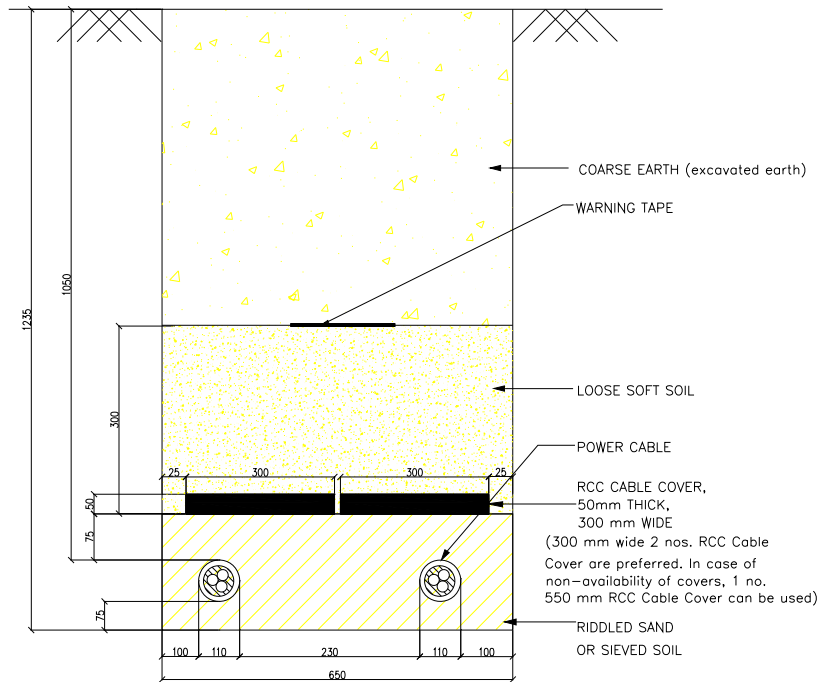
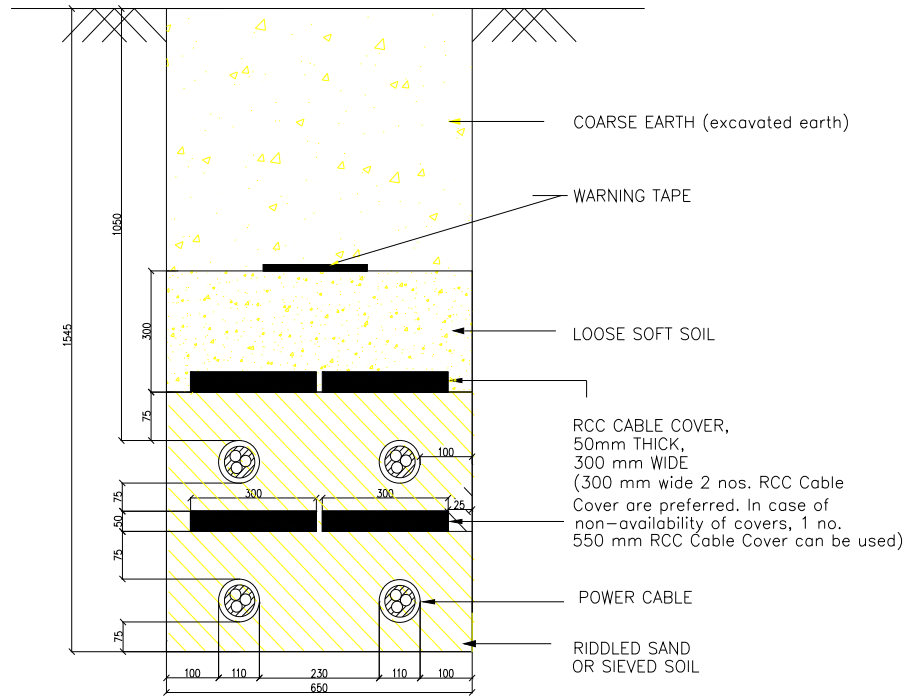


Figure 1.4 – 11kV Buried Cable for Double Circuit

**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.5 – 33kV Buried Cable for Single Circuit**

**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.6 – 33kV Buried Cable for Double Circuit**

**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.7 – 33kV Buried Cable Option-2 for Four Circuits**

## TECHNICAL SPECIFICATION FOR CABLE LAYING

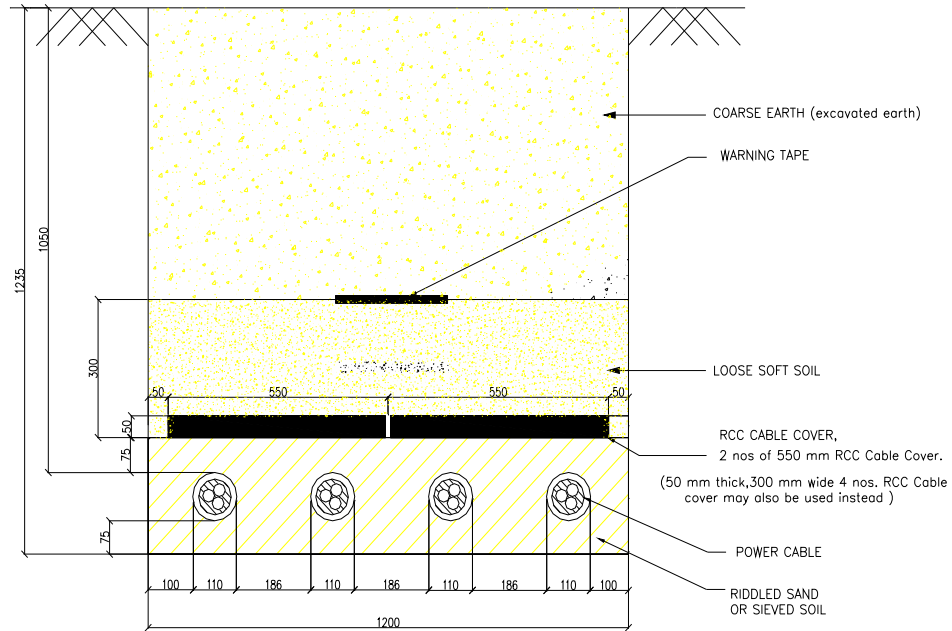
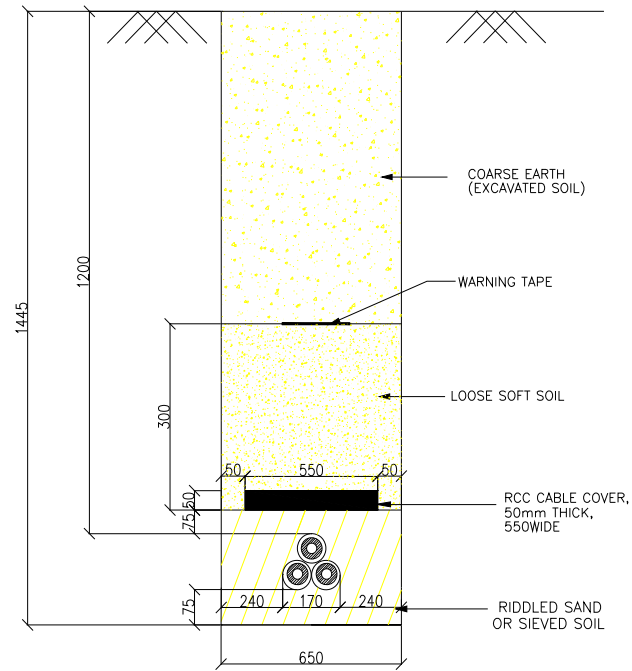


Figure 1.8 – 33kV Buried Cable Option-3 for Four Circuits



**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.9 – 66kV Buried Cable for Single Circuit**

## TECHNICAL SPECIFICATION FOR CABLE LAYING

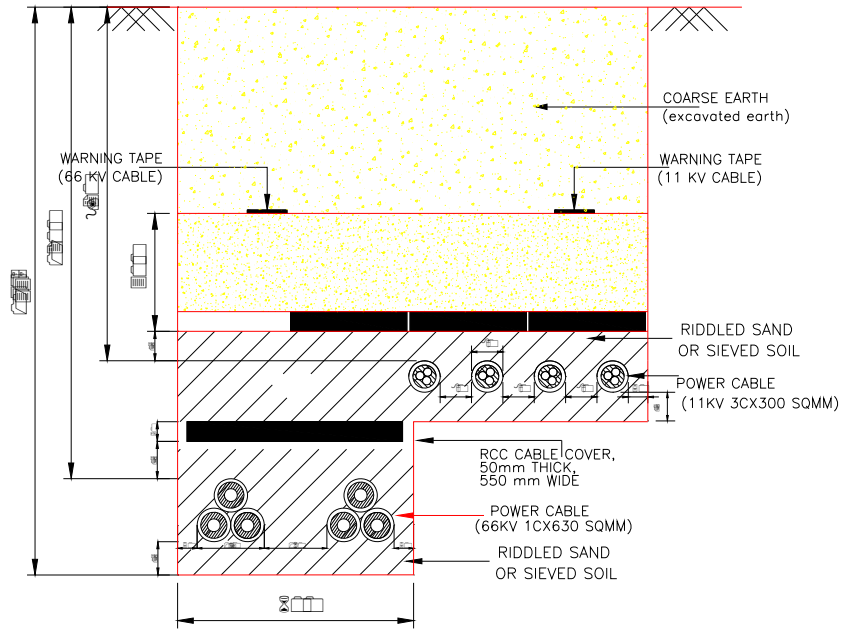
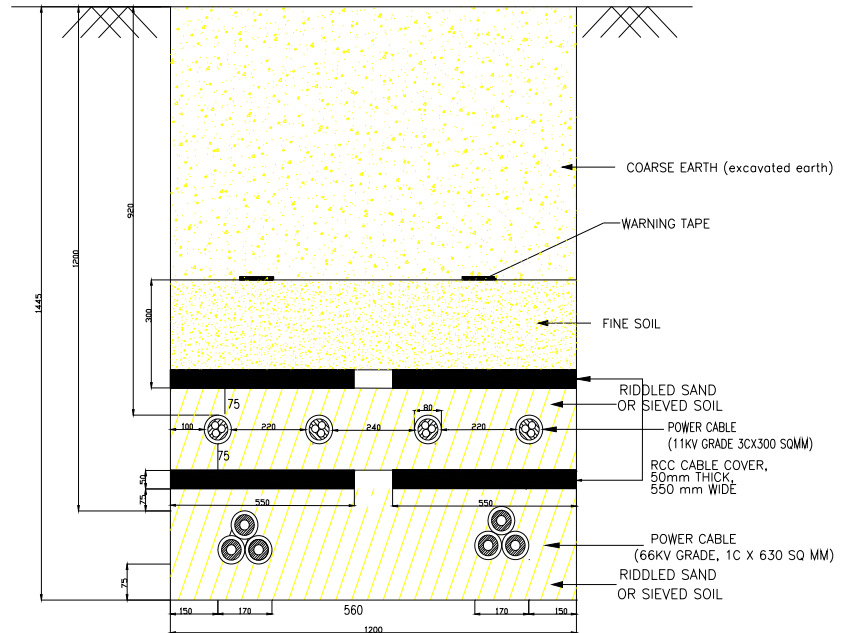


Figure 1.10 – 66kV Double Circuit and 11kV Circuits

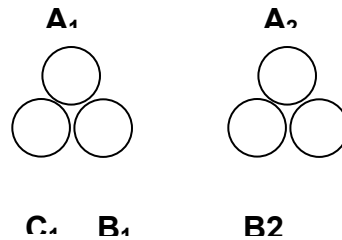
**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.11 – 66kV Double Circuit and 11kV Circuits**

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.2.8 CABLE OVER BRIDGES**

On Bridges the cables are generally supported on wooden cleats and clamped on steel supports at regular intervals. The cables laid on bridges shall be provided with Sun shield. Approval from appropriate authorities (PWD/railways) as applicable shall be taken by contractor.

**1.2.9 LAYING OF SINGLE CORE CABLES**

- a) The single core cables shall be laid in trefoil formation. Single core cables can be laid individually in 200mm HDPE pipe in case of HDD only.
- b) For single core cables laid in trefoil formation, plastic cable ties shall be used at interval of 1.0 (one) meter throughout the cable length to maintain the trefoil arrangement.
- c) To balance the inductance, the phase sequence as shown in figure 1.12 shall be maintained. (For double circuit)

**TECHNICAL SPECIFICATION FOR CABLE LAYING****Figure 1.12 – Trefoil Formation**

d) To prevent magnetic losses (eddy current and hysteresis losses), the base plate of the panels or the terminal box of the equipments, shall have aluminum plate. In case the entry into the building is through GI pipe; a “slit” in the GI pipe shall be necessary. Alternatively GI pipes may altogether be avoided and non-metallic pipes such as PVC or HDPE pipe shall be used. Concrete pipes having steel reinforcement (RCC pipe) are not to be used.

**1.2.10 EARTHING OF SINGLE CORE CABLES**

- i) Single point bonded earthing shall be employed to prevent flow of induced circulating current in the armour and screen and consequential de-rating of cables for feeder less than 2.0 KM.
- ii) For feeder length more than 2 KM, midpoint earthing shall be provided.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.2.11 GENERAL GUIDELINES FOR LAYING CABLES**

- i) Laying of the cables and handling of the same shall be undertaken, at all times, by adequate staff suitably trained and supplied with all the necessary plant, equipment and tools.
- ii) The contractor shall be responsible for all the route survey, establishment of the position of the joints as per the site exigencies and the drum lengths of cables to be laid. While carrying out the route survey the contractor shall take into account the obstacles on the route whether above or below ground. The cable shall be planned to be laid in an orderly formation, free from unnecessary bends and crossings
- iii) The contractor shall submit a drawing for the complete scheme showing the entire route, road crossings, location of joints and also the arrangement of cables to be laid. In case due to site exigencies, cables have to cross over within the trench, the same shall be shown in the drawing. For each and every job, this drawing shall be approved by BSES, prior to commencement of work.
- iv) Contractor shall arrange for all the material and manpower required for jointing and end termination. The Contractor shall provide pit, carry out excavation for creation of working space required for jointing by the jointer. The contractor shall carry out all civil works,

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

structural work, clamping and earthing, so that the cables and accessories perform satisfactorily during the entire lifetime.

- v) The entry and exit of the cables into the building shall be through RCC or GI pipe except for single core cables, which shall be properly sealed and shall be duly supported as per the method and technique approved by BSES, so that the outer sheath of the cable does not get damaged at the entry and exit points. The sealing should be of adequate length so that it minimizes the risk of spreading of fire or ingress of water.

**1.2.12 HANDLING AND STORAGE OF CABLE DRUMS**

- i) The cable drums shall be transported upright, so that the weight is distributed on both the flanges. Under no circumstances the cable drum may be laid on its side. During transportation the drums must be properly secured. The cable drums should never be dropped from Lorry or a trailer, so as to prevent damage to the cable drum and also to the cable. Ramp may be used for unloading. The drums may be rolled over short distance, provided the correct direction of rolling as provided on the drum is observed. Alternatively, a mobile crane should be used for lifting and lowering the drum. A chain-pulley arrangement may also be used to lift the drums and deposit the same on ground if required.

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

- ii) In case the drums are to be stored prior to cable laying, they should be arranged in such a way to leave some space between them for air circulation. It is desirable that the drums stand on battens placed directly under the flanges. Overhead covering is not essential except in heavy rainfall areas or during monsoon. Cable should however be protected from direct rays of sun by leaving the battens on or by providing some form of sunshade. In no case the drums shall be stored in a flat position with flanges horizontal.
- iii) For transportation of the cable drums from storage site to work site, the drum should be mounted on a trailer or an open lorry and unloaded by mobile cranes.

**1.2.13 PROCEDURE OF LAYING**

- i) The ground over which the drum is positioned at site should be properly consolidated and jacks placed on both sides of the drum to make the pay-off arrangement stable. Suitable arrangement be made to stop the drum rotation, during cable laying preferably by square wooden poles kept temporarily pivoted over cable roller under the flanges which when required can be applied on the flange as a brake by personnel manning the drum.



**TECHNICAL SPECIFICATION FOR CABLE LAYING**

- ii) The cable should always be paid off from the top of the drum. The drum must be positioned in such a way that the arrow on the drum points opposite to the direction of rotation marked on the drum.
- iii) It must be ensured that the cable is not dragged over sharp object or on the road surface, so as to avoid damage to the outer sheath of the cable.
- iv) The pulling method to be used shall be approved by BSES. Cable supplier's recommended maximum pulling tension shall not be exceeded.
- v) Rollers shall be placed at intervals and the cable shall be pulled over the rollers. The rollers shall be kept lubricated so that they rotate freely, minimize friction to the cable in motion. Rollers shall be positioned at the bends to minimize sidewall friction. The contractor shall ensure that PVC/HDPE sheath of cable is free from damage due to abrasion.
- vi) The cable should not be pulled out from the drum by lifting of the coil while the drum is lying flat on the flange. This leads to twisting of the armour and cores resulting in permanent damage to the cable.
- vii) To avoid ingress of moisture, it must be observed that the end capping of the cables is not damaged. Cut pieces of the cables must be capped immediately, before laying of the same is taken-up.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.2.14 EXCAVATION OF THE TRENCHES**

- i) The excavation of the trenches shall be commenced, with proper approvals from various authorities well in time.
- ii) Before opening of the section of the trench, the contractor shall satisfy himself that the line of the trench is clear of underground obstructions, by taking out trial pits on the line of the trench.
- iii) The exact location of each trench shall be approved on site by BSES. The trenches shall be kept as straight as possible and each trench shall be excavated to approved formation and dimensions. If necessary, the trenches shall be adequate shored by wooden planks and bracing to avoid trench cave-ins which would cause injury to the persons and also damage the cables laid.
- iv) The bottom of each trench shall be firm and of smooth contour. The contractor shall take reasonable precautions to prevent damage to the highway or ground surface from a slip or breaking away of the sides of the trench.
- v) The trench excavation and filling in shall be so executed that all walls, roads, sewers, drains, pipes, cables, structures, places and things shall be reasonably secured against risk of subsidence or injury and shall be carried out to the satisfaction of the authorities concerned. Should, however, a damage to an existing or other services be made,

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

the Contractor will arrange and pay for any necessary repair, to make good the damages.

- vi) Where trenches pass from a footway to a roadway or at other positions where a change of level is necessary, the bottom of the trench shall rise or fall gradually. The rate of rise or fall shall be approved by BSES.
- vii) Contractor shall ensure that during excavation and until restoration has been completed, for reasonable access of persons and vehicles to property or places adjacent to the route.
- viii) When the excavation of the trenches has been accurately executed, the contractor shall inform BSES for approval. Laying of cables or building of structure shall not be started until the contractor has been advised by BSES to proceed with the work.

**1.2.15 EXCAVATED MATERIAL**

- i) The materials excavated from each trench shall be placed so as to prevent nuisance or damage to adjacent ditches, drains fences, gateways and other property or things. Excavated material shall be stacked so as to avoid undue interference with traffic.
- ii) Where, owing to traffic or for reasons of safety or other considerations, this is not permissible, the excavated material shall be removed from

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

the site and returned for refilling the trench on completion of laying; surplus material shall be disposed off by the contractor at his own cost.

**1.2.16 PIPES AND DUCTS**

- i) Care shall be taken to make the bend of the pipes or duct lines as easy as practicable and in no case of radius less than 3 meters. Where approved, split pipes may be used on bends, the pipes being fitted round the cable after laying.
- ii) All road crossings shall be ducted. This applies to present and future roads as indicated on the route plans. The pipes and the ducts shall be laid in an approved manner and shall be surrounded by 150 mm of PCC (1:2:4)
- iii) Ducts under the road shall be provided by the contractor, by non-disruptive method, if road cutting is not permitted by the concerned authorities Cable laying shall be done by Horizontal Direct drilling method (HDD).
- iv) The cables shall be suitably protected at entry and exit from the pipes, so that the outer sheath does not come in contact with the edges of the pipes / ducts. The pipes and ducts shall have slope so that the seepage water can drain through the small opening provided on the lower side of the pipe sealing.

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

- v) The pipes and ducts shall be secured to the base at both ends and at regular interval, throughout the length, so that at no point the ducts or pipes get suspended over the threaded cable, and damage the same, thus defeating the very purpose of providing the pipe / duct.
- vi) At all road crossings at least one spare duct / pipe shall be provided for future use. The pipe shall be thoroughly cleaned of obstructions. A draw wire or rope shall be left in each pipe to facilitate the drawing in of the cables. The duct end shall be sealed temporarily to prevent the entry of foreign matter. End caps and permanent markers shall be placed flush with footpath / roadways at both the ends. The pipes and ducts shall be cleaned again immediately before the cables are drawn in.
- vii) The internal diameter of the pipe / duct should be such that the cables occupy only 40% of the area of the pipe / duct to avoid de-rating.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.3 JOINTING OF CABLES****1.14.1 TYPES OF ACCESSORIES**

- i) Straight Through / Transition Joints - These Joints are used for connecting two cables in the run.
- ii) Termination or sealing end – This is generally used to connect a cable to switchgear terminals, H.T. pillars, transformer boxes and OH lines etc. GIS End termination should be used wherever required.

**1.14.2 REQUIREMENTS OF CABLE JOINTS**

- i) Resistance of the jointed conductor should be equal to or less than resistance of the conductor of the same length.
- ii) Connector & lug should have a mechanical strength should be comparable to that of the conductor.
- iii) Thickness of built up insulation should be equal to or more than thickness of insulation of cable.
- iv) The Joint should provide proper mechanical protection to the insulated cores against damage by impact.

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

- v) The joints should ensure the continuity of metallic sheath or armour.
- vi) Proper stress control shall be provided to eliminate occurrences of high electrical stresses at screen cut points and over crimped connector.
- vii) The Joints shall be provided with an outermost layer resistant to corrosion by chemical effect

For joints of screened cables, following additional features must be considered

- i) Electric stress relief at termination of screen
- ii) Ionization and corona discharge

Besides the above requirement, cable joints should be simple and compact. It should require minimum time for jointing. It should be mechanically strong to withstand dynamic stresses due to short circuit current and impacts. The joints should further be resistant to corrosion and other chemical effects.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.14.3 PREPARATION BEFORE JOINTING**

A proper joint position should be selected for jointing. The joint pit should be of sufficient dimensions as to allow jointers to work. Sides of the pit should be well covered with tarpaulin sheets to prevent loose earth from falling. When jointing cables in water logged ground or under monsoon conditions, sump hole should be excavated at one end of the joint pit in such a position so that the accumulating water can be pumped out or baled out without causing interference to the jointing operation. The jointing as far as possible is to be carried out inside a tent. Before proceeding for jointing, on the existing cable, it is very essential to identify the cable to be jointed. For jointing of high tension cables, the cable should be made dead and earthed before commencement of the jointing. This should be confirmed by spiking method.

Cleanliness is the most important factor in all jointing work. All tools should be clean and dry at the time of the jointing process. Cleanliness while handling the insulation is very important. Any contamination of the insulation by dust or moisture is detrimental to the joint. In case of paper cables, the cable seals should be examined for any damage or puncture. The paper insulation should then be tested for the presence of moisture. This is done by dipping the insulation paper in hot G-38 compound (110 Deg - 120 deg.C). Care should be taken not to touch the paper with hand. Paper should be held with a plier which should be slightly warm. If moisture is present in the sample, it will be detected easily by a bubbling or crackling sound. In case of faulty cable, if on test moisture is detected, then further test would have to be carried out to arrest moisture. The



**TECHNICAL SPECIFICATION FOR CABLE LAYING**

cables to be jointed should then be meggered to check the condition of the insulation and a further check of further continuity of cables and tracing out cables to be jointed is necessary. Number on cores represents the phases. But these should never be taken for granted. Crossing of the core should be avoided in a joint.

**1.14.4 PROCESS OF JOINTING**

The process of jointing mainly consist of

- i) Connecting conductors together
- ii) Replacing the machine applied insulation
- iii) Providing earth continuity
- iv) Providing mechanical protection

Conductor joints should satisfy the following basic requirements.

- i) Ensure conductivity of the conductor by proper crimping.
- ii) Leave a reasonably smooth finish and profile on the conductor joint so as to avoid under stress concentration.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.4 BACK FILLING TRENCHES AND TEMPORARY REINSTATEMENT**

- i) Filling in of trenches shall not be commenced until BSES has inspected and approved the cables and accessories at site. The inspection should be done on daily basis so that the trenches do not remain open unnecessarily, to avoid inconvenience to public.
- ii) Where cables routes are in public highways, footpaths, gardens etc., the method of reinstatement will be subject to approval by MCD. All costs incurred will be at the contractor's expenses.
- iii) The contractor shall be responsible for proper permanent reinstatement of the upper levels, which shall be carried out to the satisfaction of BSES and the MCD authorities concerned.
- iv) Before finally leaving site, permanent reinstatement shall be executed by the contractor to the approval of MCD and the property owners and all costs incurred shall be to the contractor's account.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.5 PERMANENT REINSTATEMENT OF PUBLIC ROAD, FOOT PATH & GROUND IN PRIVATE PROPERTY**

- i) In public roads and footways the surfaces and foundations shall be temporarily reinstated by the contractor. After settlement, temporary reinstatement material shall be removed as necessary and the permanent reinstatement shall be carried out to the approval of the appropriate highway authority / MCD. Stone and pre-cast concrete paving kerbs and channels shall also be finally reinstated by the contractor.
- ii) Temporary reinstatement shall be maintained by the contractor until commencement of final reinstatement to ensure that the surface is always safe for the passage of pedestrians and vehicular traffic.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.6 IDENTIFICATION**

All cables shall be identified below the gland at each end, at joint position and at approved positions by means of bands engraved or punched with cable no. feeder name, size of cable, number of cores, phase colour etc. The bands shall be secured fastened in a permanent manner, and shall be made of material able to resist corrosion, dampness and mechanical damage.

**1.7 CABLE ROUTE MARKERS**

All cables routes shall have markers at suitable location with a gap not exceeding 30 meters. The route markers shall be approved design. Additional markers shall be provided at joint locations with approved markings.

**1.8 CABLE SUPPORTS / CLAMPS**

- i) The contractor shall supply and install all the supports, racks, trays, cleats, saddles, clips and other parts required to carry and secure the cables, without risk so that there is no undue mechanical load or stress due to weight of the cable at each end. Cleats, saddles and clips shall be of the design as approved by BSES. No cable shall be laid on the

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

trench floor. They shall be run in a neat and orderly manner and the crossing of cables within the trench shall be avoided as far as possible. Where cable runs unavoidably cross, a suitable supporting arrangement shall be provided to maintain an adequate gap between the cables.

- ii) Every cable shall be supported at a point not more than 500 mm from its termination.

### **1.9 INSTALLATION OF CABLES IN TUNNELS / BASEMENT / BELOW THE PANELS**

- i) The design of cable support for cables installed in air in cable tunnels, basements etc. shall consist of vertical steel members spaced at approved interval and secured to the walls, floors and ceilings as necessary by means of bolts either cemented in position or expanded into cored holes. Each vertical support shall have bolted to it a number of steel brackets spaced at the intervals and designed to support and retain trays constructed of galvanized sheet steel of adequate section to carry the weight of the cables, plus space for an additional quantity of future cables at least 25% by weight and dimensions in excess of the cables installed under the contract and an additional load of 100 kg at the extremity without distortion. The trays shall be designed with raised edges to retain the

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

cables and shall incorporate an interlocking feature so as to prevent movement between supports.

- ii) The design and construction of all cable cleating and supporting arrangements shall suit the cable system design. The spacing of cable supports shall be approved by BSES.
- iii) Cable run on trays shall be neatly dressed and where not provided with cleats shall be secured by heavy gauge, type approved metal reinforced, clips or saddles. Not more than six cables shall be embraced by one clip.
- iv) Mild steel of appropriate sections, duly painted in an approved manner, shall be used for fabrication of cable supports. The steel shall be free from blisters, scales, laminations or other defects. Before final painting, the steel sections shall be provided with double coat of red primer.

### **1.10 CABLE PROTECTION AT OVERHEAD TOWERS OR POLES**

Where the cables terminate on overhead line poles or towers located outside substation compounds the contractor shall provide suitable cable supporting galvanized steel work attached to the pole or tower and comprising backboard, runners, sheet, steel cover of not less than 3.0mm thickness, stays, cable cleats, anti climbing guard and all incidental items to provide secure protection for the

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

cables. Isolators and Lightning arrestor. The erection and steel structure required shall also be in scope of the contractor.

**1.11 SUN SHADES**

All cables shall be protected from direct solar radiation by ventilated sun shields as approved by BSES.

**1.12 ROUTE PLAN**

- i) Contractor should get updated the GIS map of BSES of route along with joints and other obstructions.
- ii) During the progress of the contract works the contractor shall record on a set of route plans and cross section drawings of an approved form, these details so that the same can be transferred on the GPS maps. Such particulars will allow an accurate reference to be made in the case of any fault or projected modification. These records shall show, amongst other data, both indoors and outdoors the exact position of every joint, cable end termination and also the particulars of the depth of the trench, the arrangement of the cables, with cable numbers and the position of all obstructions revealed during the course

**TECHNICAL SPECIFICATION FOR CABLE LAYING**

of excavations. These completed records shall be submitted to BSES within 15 days of completion of any particular route/feeder.

**1.13 SITE FACILITIES TO BE MAINTAINED BY THE CONTRACTOR**

- i) The contractor shall arrange for all the tools and tackles required for cable laying, jointing testing and commissioning as per this specification.
- ii) The contractor shall arrange illumination and Power supply so that the work can be carried out round the clock.
- iii) The contractor shall maintain functional dewatering pumping facility with suitable power supply so as to protect the cables and the joints from ingress of water due to rain or otherwise
- iv) The contractor shall make arrangement to provide suitable scaffolding arrangement to carry out the termination work
- v) The contractor shall carry out proper barricading of the dug cable route and the joint bays and shall take all necessary precautions to avoid any public hazard.



**TECHNICAL SPECIFICATION FOR CABLE LAYING****1.14 TESTING****1.14.1 TESTS TO BE CARRIED OUT DURING AND AFTER COMPLETION OF CABLE LAYING**

- i) Testing of cable before jointing –Cable shall be tested for Insulation Resistance prior to laying by opening the end and resealing end properly.
- ii) Testing on complete Cable Installation –
  - a. Insulation resistance of each core shall be measured against all the other cores and the metal screen connected to earth.
  - b. The resistance of the conductor shall be measured.
  - c. High voltage – Very Low frequency (VLF) kit shall be used for high voltage testing of cables. Testing voltage and duration shall be as per IEEE 400.2 standards.

**TECHNICAL SPECIFICATION FOR CABLE LAYING****Reference values for DC High voltage Test**

- d. Charging of Cable at No-Load at Nominal working voltage for 24 Hours.
- e. After laying and before termination of cable a sheath test shall be conducted for 66KV Single core Cable as under:-

At both ends the cable shall be raised from ground. From the end graphite coat applied over the outer PVC jacket shall be removed with a piece of glass for a length of 300mm. A spiked steel rod with an eye for attaching a wire shall be driven into the ground and connected to a nearby water or hydrant pipe. Insulation resistance of PVC jacket shall be measured between the aluminum wire armour and the spike with a 500/1000V insulation tester. Measured resistance shall not be less than 2.5 mega ohm / KM. Thereafter 10KV DC shall be applied for one minute in the same way. After the test the armour shall be kept earthed to the steel spike for 15 minutes for discharging residual charge.

- f. Any other testing required to complete the job shall be performed as per IEC standards.