BSES RAJDHANI POWER LIMITED

Tender Notification for

Scheme No: ES23SH1021 for Shifting of 66 kV D/C O/H line to U/G (4 Nos. of 3C X 300 Sq mm cables) from Down town Dist to 66kV Palam Grid for the circuits 220 kV Mehraulli to 66kV Palam and 66kV Palam to Bijwasan due to Development of commercial land by DIAL.

NIT NO. CMC/BR/24-25/FK/CR/AG/1226 DT: 29.10.2024

Due Date for Submission: 18.11.2024 15:30HRS

BSES RAJDHANI POWER LTD (BRPL)
Corporate Identification Number: **U74899DL2001PLC111527**
Telephone Number: +91 11 3009 9999
Fax Number: **+**91 11 2641 9833
Website: **www.bsesdelhi.com**

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BSES RAJDHANI POWER LIMITED

SECTION – I: REQUEST FOR QUOTATION

1. GENERAL

BSES RAJDHANI Power Limited invites sealed tenders on a "Single Stage: Two Envelope" bidding basis (Envelope –I, Techno-Commercial Bid & Envelope-II, Price Bid) from eligible Bidders for **"Scheme No: ES23SH1021 for Shifting of 66 kV D/C O/H line to U/G (4 Nos. of 3C X 300 Sq mm cables) from Down town Dist to 66kV Palam Grid for the circuits 220 kV Mehraulli to 66kV Palam and 66kV Palam to Bijwasan due to Development of commercial land by DIAL**".

I. The bidder must qualify the requirements as specified in heading "Qualifying Requirements" of this RFQ.

II. The sealed envelopes shall be duly super-scribed as:

"NIT No.: CMC/BR/24-25/FK/CR/AG/1226 Dated: 29.10.2024"
for
"Scheme No: ES23SH1021 for Shifting of 66 kV D/C O/H line to U/G (4 Nos. of 3C X 300 Sq mm cables) from Down town Dist to 66kV Palam Grid for the circuits 220 kV Mehraulli to 66kV Palam and 66kV Palam to Bijwasan due to Development of commercial land by DIAL".

III. Schedule of the tendering process is given below. Detailed Specification, Scope of Work, Terms & Conditions, etc are mentioned in the Tender documents, which is available on our website.

Cost of Tender Documents (Non- Refundable)	Rs. 1180/- (including GST)
Estimated cost of work	Rs.1.12 Cr.
Earnest money Deposit	Rs 2.24 Lakhs
Work to be completed by	6 months after award of work
Tender documents on sale	29/10/2024 to 18/11/2024 (Working days)
Date & time of Submission of Bid	18.11.2024 till 15:30 HRS
Date & time of opening of Techno-Commercial Bid	18.11.2024 at 15:45 HRS

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

Head of Department
Contracts & Material Dept.
BSES Rajdhani Power Limited
Ist Floor, "C" Block, BSES Bhawan
Nehru Place, New Delhi -110019.

V. Only DD shall be accepted for tender fees.

VI. The tender documents will be issued on all working days up to the date mentioned in clause 1.3. The tender documents & detail terms and conditions can also be downloaded from the website

www.bsesdelhi.com. In case tender documents are downloaded from the above website, then the bidder has to enclose a separate demand draft covering the cost of bid documents.

2. POINTS TO BE NOTED

I. Works envisaged under this contract are required to be executed in all respects up to the period of completion/ duration of work mentioned above.

II. Only those agencies, who fulfill the qualifying criteria as mentioned in clause 3 should submit the tender documents.

III. BSES RAJDHANI Power Ltd reserves the right to accept/reject any or all bids without assigning any reason thereof and alter/amend/modify/add/reduce the amount and quantity mentioned in the tender documents at the time of placing Order

IV. The bid will be summarily rejected if:

(a) **Earnest Money Deposit (EMD)** and **Tender Fee** of requisite amount is not deposited as per tender conditions

(b) Bid received after due date and time.

3. EMD

I. The bidder shall furnish, as part of its bid, an EMD of the requisite amount. 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 forms:

(a) BG from nationalized / Scheduled Bank, as per the format annexed in the tender document, in favour of BSES Rajdhani Power Limited valid for 6 (six) months from original due date of bid submission.

(b) Fixed Deposit (lien marked in favor of BSES RAJDHANI POWER LTD) valid for 6 (six) months from original due date of bid submission.

II. Please note that bank details as given below have been provided only for the purpose of making BG for EMD.

Beneficiary Name	: BSES Rajdhani Power Limited
Bank Name	: State Bank of India
A/c No.	: 40214783615
IFSC Code	: SBIN0009601

The EMD of the bidders who are not technically qualified shall be returned after the price bid opening.

III. Earnest money given by all the bidders who are techno commercially qualified except the lower bidder shall be returned within 8 (Eight) weeks after award of the work.

IV. The EMD of the successful bidder shall be returned on submission of CPBG as per tender terms.

V. The EMD may be forfeited in case of:

(a) The Bidder withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form or

(b) The successful Bidder does not

(i) Accept the Purchase Order/Work Order, or
(ii) Furnish the required CPBG as per tender terms

(c) The bidder is found to have submitted false or forged, any of the documents/certificates/information.

4. QUALIFYING REQUIREMENTS (QR)

The prospective bidder must qualify all of the following requirements to be eligible to participate in the bidding. Bidders who meet the following requirements will be considered as the successful bidder and bidder who does not meet these requirements shall be disqualified.

(A.1) TECHNICAL QR:

a) Bidder shall have executed at least One work of similar nature in last 5 years i.e. Dismantling of Monopoles of 33 kV or higher Voltage level OR Lattice Tower Structure with proper safety measures, safe handling, transportation, shifting the same with all accessories, dismantling its Single / Double circuit over-head conductors, and safely shifting of dismantled items to designated Stores / Site. The bidder must enclose order copies along with performance certificates in support of relevant experience.

b) Bidder must provide experience certificate of having successfully laid 5 KM cumulative length of cable rating 33 kV, 3C XLPE Power Cables or higher voltages preferably for electric utilities/ SEBs / Discoms /Govt. organizations/Reputed private organizations/ OEM/other govt. organizations during the last 5 years in Delhi/NCR area or any other area in India. The bidder must enclose order copies along with performance certificates in support of relevant experience.

c) For Existing vendors of BRPL, following aspects will be taken into account while carrying out technical evaluation for qualification of bids:

1) Performance of bidders as measured by BRPL in earlier executed EHV works as well as in ongoing contracts.

2) Their ability and potential (in terms of availability of resources such as supervisory and execution manpower, T&P etc.) to simultaneously execute multiple works of similar kind (more than 2 EHV projects) in a safe and efficient manner - in compliance of statutory and legal provisions, relevant IS Standards and BRPL's Standard Operating Procedures (SoP).

3) Complaint of external bodies (Court, Police, Govt Departments, other statutory bodies, NGOs, Public etc.) for offences by the bidder in earlier executed EHV works.
The bidder must enclose order copies along with performance certificates in support of relevant experience.

d) Bidders should have basic testing equipments suitable for 33 & 66 kV line (e.g. High Voltage Tester or PC Set, 5 kV Insulation Resistance Tester, Sheath Fault measurement Kit, Discharge Rod with Condenser, Phase Sequence Tester etc.) available with his company & shall submit the list of tools & tackles, with Sl No, Make & Calibration certificates suitable for carrying out the specified job of current tender.

Please note: Experience credential as a joint venture / subcontract/ consortium will not be considered.
BRPL reserves the right to qualify or disqualify their bid based on the performance in spite of them meeting the above qualifying criteria.

(A.2) FINANCIAL QR:

(i) The average annual turnover of the Bidder, in the preceding three (3) financial years (i.e., FY23-24, FY22-23 & FY21-22) should not be less than Rs 3 Crore (Three crore). The bidder shall submit the

Annual Turnover Report of the last 3 FYs duly certified by a Chartered Accountant. The Turnover certificate must have UDIN Number.

(ii) The bidder must provide proof of having solvency of an amount equal to Rs 0.50 Crore from any nationalized/ scheduled commercial bank. It should not be older than 01.01.2024.

(iii) Bidder should have Registration of GST & PAN.

(iv) Bidder should fulfill all statutory compliances like PF, ESI registration.

(v) The bidder should possess valid Electrical Contractor License issued by competent statutory agency to undertake work in NCT Delhi. In case the bidder is not having this license, they have to give the undertaking that it will be obtained by them before the start of the work at site or suitable sub-contractor having the valid license shall be engaged for works at site with the approval of BRPL where copy of valid license shall be submitted to BRPL before the start of the work.

(vi) Entities that have been currently debarred/blacklisted by any Private/central/state government institution including electricity boards in India, any of the DISCOM in India, lacks qualifying pre-requisites to participate in this tender will not be considered. Accordingly, an undertaking by the Authorized Person along with other documents to be provided by the bidder on its letterhead in this regard, confirming in clear terms, that the contractor has not been debarred/blacklisted as on the date of submission of the bid. Bidders who is currently debarred/ blacklisted/ suspended by BRPL will not be considered in this tender.

(vii) The bidder should give an undertaking on their letterhead that all the documents/certificates/information submitted by them against the tender are genuine/true/correct and the copies of documents have been made from the original document/s. Further, in case any of the documents/certificates/information submitted by the bidder is found to be false or, BRPL at its sole discretion shall be free to take all actions as permitted under law, including forfeiture of EMD and disqualification from participation in the future tenders of BRPL & Its group companies for an indefinite period or period as may be decided by BRPL.

(viii) The bidder should submit an undertaking for "No Litigation" / no legal case is pending with BRPL or its Group Companies. Bidders having any litigation/ legal case pending with BRPL shall not be considered qualified for this tender.

(A.3) OTHER REQUIREMENTS:

a. Company reserves the right to carry out technical capability/ infrastructure assessment of the Bidders by factory/office/site inspection or by any other means and company's decision shall be final in this regard.

b. No Joint ventures / consortiums are allowed.

c. The bidder shall submit all necessary documentary evidence to establish that the Bidder meets the above qualifying requirements including but not limited to the following:

i. Last three Financial Years (FY23-24, FY22-23 & FY21-22) audited financial statement.

ii. Bidder to submit UDIN based CA Certificate showing NIL dues towards Statutory Liabilities, including GST, Taxation, PF, ESI, or any other dues Statutory in nature for the period upto 31.03.2023, herein collectively called as "Statutory dues" and there is no liability over the bidder relating to deposition of such statutory dues.

iii. Detail of Banks and Fund & Non fund based Credit limit

iv. Details of formation/registration of the firm (Proprietary/ Partnership) or Company along with all relevant details)
v. Memorandum & Articles of Association of the Company/ Partnership Deed of the Firm /other registration documents, as applicable
vi. Organization Chart of the Bidders Company/organization
vii. Organization chart for execution of the contract
viii. Experience details with credentials
ix. Number of Employees & necessary details
x. Details of office/s in Delhi, Details of Registered and Corporate offices and details of other offices/establishments in India.
xi. Work order / Agreement copies along with performance certificates in support of relevant experience.
xii. Turnover certificate issued by CA (along with UDIN no.) for the last three Financial Years.
xiii. Net worth certificate as elaborated in financial QR
xiv. List of pending litigation with government/other institution on account of executing any order.
xv. Copy of ESI/PF Registration certificate
xvi. Copy of PAN/GST no.
xvii. Copy of GST Return of last Financial Year.
xviii. Copy of valid Electrical License
xix. Non-Disclosure Agreement (NDA) as per format attached
xx. Bidder's details as per format attached
xxi. Solvency Certificate
xxii. An undertaking to provide all Tools & Plants , PPEs as per tender scope

(a) The bidder should enclose performance certificates in support of relevant experience.
(b) For Existing vendors of BRPL, the evaluation will also include the performance in the existing contracts via-a-vis performance in terms of HR issues, all statutory Compliance parameters and wages disbursement by Vendors. BRPL reserves the right to qualify or disqualify their bid based on the contract performance despite them meeting the above-mentioned qualification requirements. In case of bidder has a previous association with BRPL/BYPL for similar product and service, the performance feedback for that bidder by BRPL/BYPL shall only be considered irrespective of performance certificate issued by any third organization.

BRPL may ask for such other documents as it deems fit for substantiating/ justifying the submissions made by the bidder.

5. PRE-BID MEETING:

A pre-Bid meeting shall be organized physically or digitally (through web conferencing platform) at the time and date as specified in the tender documents in the presence of those bidders or their authorized representatives who may choose to be present.

The details of the proposed Webex Meeting (if applicable) are given below: -

NIT-1226 DT: 29.10.2024 for Scheme No: ES23SH1021 for Shifting of 66 kV D/C O/H line to U/G (4 Nos. of 3C X 300 Sq mm cables)
Hosted by BRPL Head C&M

https://bsesbrpl.webex.com/bsesbrpl/j.php?MTID=m0724c0b336c7a411918a6a55fdcb55d0
Thursday, November 14, 2024 3:00 PM | 5 hours | (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
Meeting number: 2515 774 8077
Password: jHRGMtF5q34 (54746835 when dialing from a video system)

Join by video system
Dial 25157748077@bsesbrpl.webex.com
You can also dial 210.4.202.4 and enter your meeting number.

Join by phone
+65-6703-6949 Singapore Toll
Access code: 251 577 4807
All queries related to this tender must reach to C&M Department of BRPL at least three days before the date of the pre- bid meeting. All the bidder's queries shall be replied to in the pre-bid meeting. In case any change is required in the tender document the same shall be affected in the form of corrigendum to this tender. The bidder or their representatives who intend to bid and who have either purchased tender documents or will pay tender fees for downloaded documents are invited to attend the pre-bid meeting. Corrigendum, if any, to the tender document shall be hosted on the website subsequent to the pre-bid meeting. Bidders are requested to submit their offer strictly in line with this tender document& corrigendum if any.

6. BID SUBMISSION

1. The bidders are required to submit the bid in 2(two) parts and in original& duplicate (total 2 copies) at the following address:

   Head of Department,
   Contracts & Material Department,
   BSES Rajdhani Power Limited,
   Ist Floor, "C" Block, BSES Bhawan,
   Nehru Place,
   New Delhi-110019.

2. Technical bid documents along with commercial terms and conditions shall also be submitted in Pen Drive. No price bid shall be submitted in Pen Drive. The PEN Drive should be owned by Bidder. The bidder shall ensure that the Pen Drive is free from all viruses/malware. The pen drive once submitted shall not be returned.

3. This is a two part bid process. Bidders are to submit the bids in 2(two) parts. Both these parts should be furnished in separate sealed covers super scribing **NIT no. DUE DATE OF SUBMISSION, with particulars as PART-A Techno-Commercial Bid and Part-B PRICE BID** and these sealed envelopes should again be placed in another sealed envelope which should be super scribed with **—"Tender Notice No.& Due date of opening".** The same shall be submitted before the due date & time specified.

6.3.1 PART A: TECHNO-COMMERCIAL BID, UNPRICED (Envelop-1):

The first sealed envelope shall contain an Unpriced Techno-commercial bid in paper form (hard copies) and envelope super-scribing **PART-A Techno-Commercial Bid**. The details to be submitted in techno-commercial bids are given below:

a) General information about bidder

b) Documentary evidence in support of all the qualifying criteria as per clause 4.0,

c) EMD of requisite amount

d) Non-refundable separate demand draft for Rs. 1180/- In case the forms are downloaded from the website

e) Technical Literature if any.

f) Details of experience of works of the same or similar nature. Copy of work orders and performance certificates.

g) Power of attorney

h) Acceptance to Commercial Terms and Conditions viz Delivery schedule/period, Payment terms, BG etc

i) Any other relevant document to support bidder meeting QR

Techno-Commercial Bid should not contain any cost information whatsoever and shall be submitted within the due date. After techno-commercial evaluation, the list of techno-commercially qualified bidders will be posted immediately on the BSES website.

The bidder should submit complete tender document along with all corrigendum (if any) published against this NIT at our website, signed and stamped with bidder's seal as an acceptance of all the terms & conditions of the Tender.

6.3.2 PART **B: PRICE BID (Envelop-2):**

The second sealed envelope shall contain Price bids in paper form (hard copies and envelope super-scribing **PART-B Price Bid** on it. The details to be submitted in the Price bid are given below:

(a) **PRICE BID** shall Comprise of Prices **strictly** in the Format enclosed in SECTION VII. Any change in price bid format, content may lead to rejection of the bid.

(b) Price Bid will be opened after techno-commercial evaluation of all the bids and only of the qualified bidders.

6.3.3 FINANCIAL BID EVALUATION THROUGH REVERSE AUCTION

Reverse Auction (RA) 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 RA process shall be governed by the terms and conditions enclosed as Annexure-III in this tender document. Training/details shall be provided to bidders before participation in auction. In case RA is not conducted /concluded for any reasons, a "final no regret" financial bid in a sealed envelope will be called for from all qualified bidders. 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 shall be final and binding on the bidders.

6. TIME SCHEDULE

The activities and their timelines are given hereunder which needs to be adhered by the bidders.

S. No.	Activity	Description	Due date
1	Submission of Technical& Commercial Queries, if any	All Queries related to NIT	13/11/2024
2	Pre-Bid Meeting	Discussion on pre-bid queries	14/11/2024
3	Submission of Techno-Commercial & Price Bid	Unpriced Techno-Commercial & Price Bid in separate sealed envelopes	18/11/2024
4	Opening of Techno-Commercial Bid	Opening of PART-A	18/11/2024
5	Opening of Price Bid	Opening of PART-B of only the techno-commercially qualified bidders (List of bidders will be published at our website)	To be informed separately
6	Reverse Auction	As per RA terms	Schedule will be intimated to eligible bidders through email from email id: BRPL.Eauction@relianceada.com

7. AWARD DECISION:

1. Company intends to award the business on a lowest bid basis, so bidders 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.
2. The Company reserves all the rights to award the contract to one or more bidders who meet the execution requirement or nullify the award decision without assigning any reason thereof.
3. In case the performance of any contractor is found unsatisfactory during the execution process, the award will be cancelled and BRPL reserves the right to award the work to another contractor(s) who will be found eligible/fit.
4. The abnormally higher or abnormally lower bids shall not be considered with respect to estimated cost. The criteria decided by BRPL on this shall be final and binding on the bidders.
5. The bidding firms are advised to quote their Margin / Administrative Service Charges accordingly. BRPL reserves the right to reject the bids quoted with abnormally higher or abnormally lower individual

activity rates. The criteria decided by BRPL on this shall be final and binding on the bidders and will not be open for discussion under any circumstances.

8. MARKET INTEGRITY

We have a fair and competitive marketplace. The rules for the bidders are outlined in the Terms & Conditions of the tender documents. Bidders must agree to these rules prior to participating in the tender. In addition to other remedies available, we reserve 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 & Conditions. Bidder(s) who violate the marketplace rules or engage in behaviour that disrupts the fair execution of the marketplace restricts a bidder from participation in future tenders of BRPL to a length of time as decided by BRPL, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honour prices submitted to the market place.
- Breach of the terms published in Request for Quotation/NIT
- Misrepresentation of facts, submitting false and fabricating documents

9. CONFIDENTIALITY

- All information contained in this tender document is confidential and may not be disclosed, published or advertised in any manner without written authorization from BRPL. This includes all bidding information submitted.
- All tender documents remain the property of BRPL and all bidders are required to return these documents to BRPL upon request.
- Bidder(s) who do not honour these confidentiality provisions will be excluded from participating in future bidding events.
- The bidder shall sign a Non-Disclosure Agreement (NDA) in the format attached in tender document and submit along with its bid.

10. CONTACT INFORMATION

Technical & Commercial clarification, if any, regarding this tender shall be sought in writing and sent by e-mail to the following e-mail IDs:

Address	Name/ Designation	E-mail Address / Phone Number
Technical		
"Scheme No: ES23SH1021 for Shifting of 66 kV D/C O/H line to U/G (4 Nos. of 3C X 300 Sq mm cables) from Down town Dist to 66kV Palam Grid for the circuits 220 kV Mehraulli to 66kV Palam and 66kV Palam to	Mr. Rama Swamy Velpula	Velpula.Ramaswamy@relianceada.com
	AsVP-EHV(P&C), South	9346259334
	Mr. Nirjendu Pandey Head – EHV(P&C)	Nirjendu.Pandey@relianceada.com
		011-49209323
	Mr. Abhinav Srivastava	abhinav.r.srivastava@relianceada.com
	AsVP – (CES Team)	9350134826

Bijwasan due to Development of commercial land by DIAL".	All technical queries shall also be marked copy to Commercial team as per the details below.	
Commercial		
C&M Dept,	Ms. Anima Gaur	anima.gaur@relianceada.com
1st Floor, C Block,	DGM(Contracts)	011-49209429
BSES Rajdhani Power Ltd		
BSES Bhawan, Nehru Place,	Mr. Amitava Nandi,	Amitava.Nandi@relianceada.com
New Delhi – 110019.	AsVP – (Head Contracts)	011-4920 9619

SECTION – II: INSTRUCTION TO BIDDERS

1.00 GENERAL

BSES Rajdhani Power Ltd, hereinafter referred to as "The Company" is desirous of awarding work for "Scheme No: ES23SH1021 for Shifting of 66 kV D/C O/H line to U/G (4 Nos. of 3C X 300 Sq mm cables) from Down town Dist to 66kV Palam Grid for the circuits 220 kV Mehraulli to 66kV Palam and 66kV Palam to Bijwasan due to Development of commercial land by DIAL". Bidders are requested to visit the site to understand the scope of work, site conditions and requirements prior to Bidding. Hence, no price/time escalation shall be admissible on these accounts.

2.00 SCOPE OF WORK

The scope of the work is as per BOQ in the tender.

3.00 DISCLAIMER

This Document includes statements, which reflect various assumptions, which may or may not be correct .Each Bidder shall 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.

Neither Purchaser 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 Purchaser or its employees, or otherwise a rising in any way from the selection process for the Supply.

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.

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).

4.00 COST OF BIDDING

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

5.00 BIDDING DOCUMENTS

The 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

Special Terms and Condition - Section –III
General Terms and Condition Supply (GCC-Supply) - Section –IV
Price Format Supply- Section V
General Terms and Condition Erection, Testing & Commissioning (GCC-ETC) - Section –VI
Price Format Erection, Testing & Commissioning - Section VII
Grand Summary of the Quoted Price – Section VIII
Vendor Code of Conduct - Section IX
Scope Demarcation – Annexure-I
Technical Specifications - Annexure II

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.

6.00 AMENDMENT OF BIDDING DOCUMENTS

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.

The Amendment shall be part of the Bidding Documents, pursuant to Clause 5.00, and it will be notified in web site **www.bsesdelhi.com**, and will be binding on them.

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. The same shall be published as a corrigendum in website **www.bsesdelhi.com.**

Purchaser shall reserve the rights to following

- extend due date of submission
- modify tender document in part/whole
- cancel the entire tender

Bidders are requested to visit website regularly for any modification/clarification/ corrigendum/ addendum of the bid documents

7.00 LANGUAGE OF BID

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the
Bidder and the Purchaser 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 English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

8.00 DOCUMENTS COMPRISING THE BID

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

- Bid Form, Price & other Schedules (STRICTLY AS PER FORMAT) and Technical Data Sheets completed in accordance with Technical Specification

- All the Bids must be accompanied with the required EMD as mentioned in the Section-I against each tender.
- Tender documents duly stamped and signed on each page by authorized signatory

9.00 **BID FORM**

9.01 The Bidder shall submit one "Original" and one "Copy" of the Un-priced Bid Form, Price Schedules & Technical .Data Sheets duly filled in as per attached specification/BOM etc enclosed.

9.02 **EMD**

The bidder shall furnish, as part of its bid, an EMD amounting as specified in the RFQ. The EMD is required to protect the Purchaser against the risk of Bidder's conduct which would warrant forfeiture.

The EMD shall be denominated in any of the following form**:**

(a) Banker's Cheque / Demand Draft/Pay Order drawn in favour of BSES Rajdhani Power Ltd, payable at Delhi.

(b) Bank Guarantee valid for One hundred Twenty (120) days after due date of submission or amended due date of submission drawn in favour of BSES Rajdhani Power Ltd, BSES Bhawan, Nehru Place, New Delhi 110019

The EMD may be forfeited in case of:

(a) The Bidder withdraws its bid during the period of specified bid validity

OR

(b) In the case of a successful Bidder, if the Bidder does not

(i) Accept the Purchase Order/ Work Order, or

(ii) Furnish the required performance security BG.

10.00 **BID PRICES**

10.01 Bidders shall quote for the entire Scope of Supply/Work with a break-up of prices for individual items and Taxes & Duties. The total Bid Price shall also cover all the Supplier's obligations mentioned in or reasonably to be inferred from the Bidding Documents in respect of Design, Supply, Transportation to site, Erection, testing & commissioning all in accordance with the requirement of Bidding Documents The Bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total Price with taxes, duties & freight up to destination.

10.02 The prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during execution of the supply work, breakup of price constituents, should be there. The Bidder 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.

10.03 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/ Price Variation Clause will be treated as non -responsive and rejected.**

11.00 **BID CURRENCIES**

Prices shall be quoted in Indian Rupees Only.

12.00 **PERIOD OF VALIDITY OF BIDS**

12.01 Bids shall remain valid for 120 days from the due date of submission of the Bid & subsequent corrigendum/amendment/extension of due date of submission.

12.02 Notwithstanding Clause 12.01 above, the Purchaser 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 post/courier.

13.00 **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.

14.00 **FORMAT AND SIGNING OF BID**

14.01 The original Bid Form and accompanying documents, clearly marked "Original Bid" and “copy” must be received by the Purchaser at the date, time and place specified pursuant to Clauses 15.0 and 16.0. In the event of any discrepancy between the original and the copy, the original shall govern.

14.02 The original and copies of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the Bidder. **Such authorization shall be 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.

15.00 **SEALING AND MARKING OF BIDS**

15.01 Bid submission: One original & one Copy (hard copies) of all the Bid Documents shall be sealed and submitted to the Purchaser before the closing time for submission of the bid.

15.02 The Technical Documents and the EMD shall be enclosed in a sealed envelope and the said envelope shall be super scribed with —“Technical & EMD“. The price bid shall be inside another sealed envelope with super scribed “Financial Bid “. Both these 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 and Copy. The envelopes should be super scribed 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 Purchaser to collect the proposals from Courier/Airlines/Cargo Agents etc shall be entertained by the Purchaser.

16.00 **DEADLINE FOR SUBMISSION OF BIDS**

16.01 The original Bid, together with the required copies, must be received by the Purchaser at the address specified earlier.

16.02 The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

17.00 **ONE BID PER BIDDER**

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

18.00 **LATE BIDS**

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

19.00 **MODIFICATIONS AND WITHDRAWAL OF BIDS**

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

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

21.00 **CLARIFICATION OF BIDS**

To assist in the examination, evaluation and comparison of Bids, the Purchaser 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 Purchaser 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. Purchaser may ask for submission of original documents in order to verify the documents submitted in support of qualification criteria.

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, Purchaser 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 purchaser and/or the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non - conformity.

23.00 **EVALUATION AND COMPARISON OF BIDS**

The evaluation of Bids shall be done based on the delivered cost competitiveness basis.

23.01 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.

23.02 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 Purchaser'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:

- Delivery Schedule
- Conformance to Qualifying Criteria
- 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 Purchaser 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.

24.00 **CONTACTING THE PURCHASER**

24.01 If any Bidder wishes to contact the Purchaser on any matter related to the Bid, from the time of Bid opening to the time of contract award, the same shall be done in writing only.

24.02 Any effort by a Bidder to influence the Purchaser and/or in the Purchaser‘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 PURCHASER ’S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR A LL BIDS**

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

26.00 **AWARD OF CONTRACT**

26.01 The Purchaser 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. Purchaser reserves the right to award order to other bidders in the

tender, provided it is required for timely execution of project & provided he agrees to come to the lowest rate.

26.02 The Purchaser intends to issue separate Purchase/Work Orders viz
a) Purchase Order for Supply
b) Work Order for Installation, Testing & Commissioning

27.00 **THE PURCHASER 'S RIGHT TO VARY QUANTITIES**

The Purchaser 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.

28.00 **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 Purchaser. The date of LOI/PO shall be treated as Start date of work.

29.00 **CONTRACT PERFORMANCE BANK GAURANTEE**

Within 15 days of the receipt of Notification of Award/ Letter of Intent/ PO from the Purchaser, the successful Bidder shall furnish the Performance Bank Guarantee towards faithful performance of Contract for an amount of 10% (Ten percent) of the Contract Price. The Performance Bond shall be valid up to completion period/handing over, whichever is earlier plus 3 months claim period. Upon submission of the performance security, the EMD shall be released. 2 (two) nos. separate CPBG's shall be submitted against Supply, ETC.

30.00 **CORRUPT OR FRADULENT PRACTICES**

30.01 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 a 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.

(b) Will reject a proposal for award 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 competing for, or in executing, a contract.

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

31.00 **COMPLETION PERIOD**

6 months from the date of LOI/PO.

Section III

SPECIAL TERMS AND CONDITIONS OF CONTRACT

1.1. The scope of this tender includes supply, survey, design, engineering, manufacturer, shop testing, inspection, packing, dispatch, loading, unloading and storage at site, storage and construction insurance, assembly, erection, structural, complete pre-commissioning checks, testing and commissioning at site, obtaining statutory clearance and handing over to owner on single point responsibility basis.

1.2. The scope includes supply of all barricading, free issued materials (including installation, transportation, loading & unloading), dewatering, watch and ward and transportation of scrap (generated at Site), balance free-issued material, dismantled material from site to BRPL store including loading & unloading and no additional charges shall be paid against these activities. Used barricading material will be taken back by bidder soon after job is handed over or as directed by BRPL Engineer-In-Charge (E-I-C). No additional cost for these items will be paid to the Bidder. Any leakage, pilferage and damage of the material shall be in vendor's scope.

1.3. Prices for all the activities shall be FIRM till the actual completion of the job. Statutory variation will be allowed for direct supplies only wherever breakup of Taxes & Duties are available in Price Bid. In case bidder has not submitted any price breakup, no variation on account of statuary variation shall be paid extra by BRPL.

1.4. Wherever BRPL specifications are not available relevant IS/IEC to be followed. All Drawings mentioned in the Tender Specification and other required for the completeness of the tender shall be submitted. Drawing submission process shall not be deemed complete if all the requirements are not complied during the submission of the same.

1.5. The Bidder should have own Safety equipment like Neon Tester, Portable Earth, Earthing discharge rod etc. along with Calibration Certificates of all the equipment.

1.6. The Bidder should have all major tools and tackles required for installation, testing & commissioning works.

1.7. Bidder has to submit the item wise price bifurcation in bid. Un-priced copy must be attached with the Part A. Reverse Auction will be carried out on Lump sum Basis/Total Landed Cost i.e. Supply + ETC

1.8. Any other material not specifically mentioned above but required for successful commissioning and operation is in the scope of bidder. Prior approval shall be taken from central engineering department before execution. Commercial approval shall be taken from C&M Department before execution.

1.9. Successful bidder has to adhere to the statutory compliance.

1.10. Successful Bidder has to depute the safety officer and quality officer separately at site for whole duration and they have to submit the safety report and quality report to BRPL E-I-C on weekly basis.

1.11. Successful bidder has to send the weekly progress report to BRPL EIC.

1.12. In case of any major deviation, deletion or addition which bidder may feel is relevant to this project & for its safe operation and completion of works; Bidder may clearly highlight and communicate the same to the purchaser with his bid.

1.13. **Guarantee period/Defect Liability period:**

The Guarantee Period will be equipment/service/work specific and shall be as specified in the Technical Specifications for the equipment/material/service/work and where Technical specifications are not part of contract documents or guarantee period is not specified in the Technical specifications, the guarantee period shall be as per the Special Terms and Conditions of the Contract. In case of no mention of the guarantee period in Technical specifications, Defect liability period will be 24 Months from the Date of Commissioning or 30 months from the date of delivery of final lot of supplies made, whichever is later.

If during the defects liability period any materials / items are found to be defective, these shall be replaced or rectified by the bidder at his own cost within 30 days from the date of receipt of intimation

1.14. **Failure during Guarantee Period:**

If the equipment and material supplied/service or work rendered under the contract fails to perform its due, rated & intended quality performance, during the Guarantee period, the bidder is liable to undertake repair/rectify/replace the equipment and material supplied/service or work rendered under the contract within time frame as specified below at bidder's cost to make the equipment and material supplied/service or work rendered under the contract of performing its due, rated and intended quality performance. If bidder fails to repair/rectify/replace the equipment or material supplied/service or work rendered under the contract, failed in Guarantee Period, purchaser will be at liberty to get the same done at bidder's risks and costs and recover all such expenses plus the purchaser own charges (@ 15% of expenses incurred), from the bidder or from the "Performance Bank Guarantee" as the case may be.

If during the Warranty/ Guarantee period some parts of the supplies are replaced owing to the defects/ damages under the Warranty, the Warranty period for such replaced parts shall be until the expiry of twelve months from the date of such replacement or renewal or until the end of original Guarantee period, whichever is later.

a) Service Engineer Availability to Attend, Identify & Restore Defects (Minor) of materials/Equipment's under Guarantee Period within 48 Working Hours (Exclusion of Material Support Cases)

b) Spare Material Delivery for rectification of defect (Major) Under Guarantee Period within Two Weeks. Bidder must keep Requisite Inventory of Critical Spares & Other Equipments Covered in Guarantee Period to Restore Equipment within Two Weeks.

c) In Case Of Complete Replacement of material, within a Period of 4 Weeks.

1.15. All the bay equipment (i.e- LA, CT, PT, Disc Insulator, String, Suspension Insulator, Bushing etc.) shall be Polymeric type in the place of porcelain with creepage 31mm/kV. Rest of the parameter to be followed as per tech spec.

1.16. **PROJECT INFORMATION & COMPLETION**

The contractor shall be fully responsible to complete the project in time. It is desired that the project should be completed as per the schedule from the date of LOI or purchase order whichever is earlier. The detailed completion schedule shall be prepared by vendor and shall be submitted at the time of detailed engineering for approval. Vendor has to submit the progress report fortnightly with this tender/as asked by the Purchaser.

1.17. PROJECT IMPLEMETATION & EXECUTION CONTROL

The bidders are requested to submit the following along with the bid, about the project implementation & execution methodology.

a) Write up/overview of project Plan
b) Implementation Methodology
c) Project Organization Chart for Representatives, Project Office & site office teams along with the functions.
d) Bar Chart & Network Diagram (with critical path) for various activities to achieve scheduled completion.

SECTION IV
GENERAL TERMS AND CONDITIONS - SUPPLY

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 Purchaser 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 Purchaser 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 Purchaser, 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 Purchaser's decision in regard to the responsiveness and rejection of bids shall be final and binding without any obligation, financial or otherwise, on the Purchaser.

2.0 Definition of Terms

2.01 "Purchaser" shall mean BSES Rajdhani Power Limited, on whose behalf this bid enquiry is issued by its authorized representative / officers.

2.02 "Bidder" shall mean the firm who quotes against this bid enquiry issued by the Purchaser. "Supplier" or "Supplier" shall mean the successful Bidder and/or Bidders whose bid has been accepted by the Purchaser and on whom the "Letter of Acceptance" is placed by the Purchaser and shall include his heirs, legal representatives, successors and permitted assigns wherever the context so admits.

2.03 "Supply" shall mean the Scope of Contract as described.

2.04 "Specification" shall mean collectively all the terms and stipulations contained in those portions of this bid document known as RFQ, Commercial Terms & Condition, Instructions to Bidders, Technical Specifications and the Amendments, Revisions, Deletions or Additions, as may be made by the Purchaser from time to time.

2.05 "Letter of Acceptance" shall mean the official notice issued by the Purchaser notifying the Supplier that his proposal has been accepted and it shall include amendments thereto, if any, issued by the Purchaser. The "Letter of Acceptance" issued by the Purchaser shall be binding on the "Supplier" The date of Letter of Acceptance shall be taken as the effective date of the commencement of contract.

2.06 "Month" shall mean the calendar month and "Day" shall mean the calendar day.

2.07 "Codes and Standards" shall mean all the applicable codes and standards as indicated in the Specification.

2.08 "Offer Sheet" shall mean Bidder's firm offer submitted to BRPL in accordance with the specification.

2.09 "Contract" shall mean the "Letter of Acceptance/Purchase Order" issued by the Purchaser.

2.10 "Contract Price" shall mean the price referred to in the "Letter of Acceptance/Purchase Order".

2.11 "Contract Period" shall mean the period during which the "Contract" shall be executed as agreed between the Supplier and the Purchaser in the Contract inclusive of extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force majeure.

2.12 "Acceptance" shall mean and deemed to include one or more of the following as will be stipulated in the specification:

a) The written acceptance of material by the inspector at suppliers works to ship the materials.
b) Acceptance of material at Purchaser site stores after its receipt and due inspection/ testing and release of material acceptance voucher.
c) Where the scope of the contract includes supplying, acceptance shall mean issue of necessary equipment / material takeover receipt after installation & commissioning and final acceptance.

3.0 Contract Documents & Priority

Contract Documents: The terms and conditions of the contract shall consist solely of these RFQ conditions and the offer sheet. The several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies, the same shall be explained and adjusted by the Purchaser, who shall thereupon issue to the Contractor, instructions thereon. In such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

1. Any amendments to Contract
2. Commercial Terms & Conditions of the Contract
3. Clarifications/addendum/corrigendum to Tender
4. Terms & Conditions of the Tender

4.0 Scope of Supply -General

4.01 The "Scope of Supply" shall be on the basis of Bidder's responsibility, completely covering the obligations, responsibility and supplies provided in this Bid enquiry whether implicit or explicit.
4.02 Bidder shall have to quote for the Bill of quantities as listed elsewhere.
4.03 All relevant drawings, data and instruction manuals.

5.0 Quality Assurance and Inspection

5.01 Immediately on award of contract, the bidder shall prepare detailed quality assurance plan/test procedure identifying the various stages of manufacture, quality checks performed at each stage, raw material inspection and the Customer hold points. The document shall also furnish details of method of checking, inspection and acceptance standards / values and get the approval of Purchaser before proceeding with manufacturing. However, Purchaser shall have right to review the inspection reports, quality checks and results of suppliers in house inspection department which are not Customer hold points and the supplier shall comply with the remarks made by purchaser or his representative on such reviews with regards to further testing, rectification or rejection, etc. In case of standard items, BRPL shall forward the standard QAP which is to be followed by vendor during manufacturing.

5.02 Witness and Hold points are critical steps in manufacturing, inspection and testing where the supplier is obliged to notify the Purchaser in advance so that it may be witnessed by the Purchaser. Final inspection is a mandatory hold point. The supplier can proceed with the work past a hold point only after clearance by purchaser or a witness waiver letter from BRPL.

5.03 The performance of waiver of QA activity by Purchaser at any stage of manufacturing does not relieve the supplier of any obligation to perform in accordance with and meet all the requirements of the procurement documents and also all the codes & reference documents mentioned in the procurement document nor shall it preclude subsequent rejection by the purchaser.

5.04 On completion of manufacturing the items can only be dispatched after receipt of dispatch instructions issued by the Purchaser.

5.05 All in-house testing and inspection shall be done without any extra cost. The in-house inspection shall be carried out in presence of BRPL/BRPL authorized third party inspection agency. Cost of Futile/abortive visit(s) shall be debited from the invoices

5.06 Purchaser reserves the right to send any material being supplied to any recognized laboratory for testing, wherever necessary and the cost of testing shall be borne by the Bidder. In case the material is found not in order with the technical requirement / specification, the charges along with any other penalty which may be levied is to be borne by the bidder. To avoid any complaint the supplier is advised to send his representative to the stores to see that the material sent for testing is being sealed in the presence of bidder's representative.

6.0 Packing, Packing List & Marking

6.01 **Packing:** Supplier shall pack or shall cause to be packed all Commodities in crates/ boxes/ drums/ containers/ cartons and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BRPL, Delhi/New Delhi stores/site without undue risk of damage in transit.

6.02 **Packing List:** The contents of each package shall be itemized on a detailed list showing the exact weight, extreme outside dimensions (length, width & weight) of each container/ box/ drum/ carton, Item SAP Code , PO No & date. One copy of the packing list shall be enclosed in each package delivered.

7.01 Price basis for supply of materials

Bidder has to quote their prices on Landed Cost Basis and quote separate price for each item.

FIRM prices for supply to BRPL Delhi/New Delhi stores inclusive of packing, forwarding, loading at manufacturer's premises, payment of all taxes, GST, Freight, any other local charges etc.

The above supply prices shall also include unloading at BRPL Delhi/New Delhi stores/site.

Transit insurance will be arranged by bidder.

8.0 Terms of payment and billing – SUPPLY

a) 80% pro-rata of supply value shall be payable against R/A bills for supply of equipment and materials within 30 days against receipt of material at site and submission of following documents duly certified by BRPL Project-in-charge:

i.Consignee copy of LR
ii.Detailed invoice showing commodity description, qty, unit & total price,
iii.Original certificate issued by BRPL confirming receipt of material at site & acceptance
iv.Dispatch clearance & inspection report issued by the inspection authority
v.Packing List, Test Reports
vi.Guarantee Certificate.

b) 10% pro-rata after installation/erection of equipment duly certified by BRPL Project-in-charge

c) 10% pro-rata after completion of successful acceptance testing, commissioning and Handing Over of the entire Installation and duly certified by BRPL Project-in-charge and submission of PBG of 10% of contract value valid up to Defect Liability period i.e. 12 months from the date of Handing over of entire Installation Plus 3 months towards Claim period.

9.0 Price Validity

All bids submitted shall remain valid, firm and subject to unconditional acceptance by BRPL Delhi for 120 days from the due date of submission & subsequent corrigendum/amendment/extension of due date of submission. For awarded suppliers/contractors, the prices shall remain valid and firm till contract completion.

10.0 Performance Guarantee

10.01 Bank guarantee shall be drawn in favour of "BSES Rajdhani Power Ltd" as applicable. The performance Bank guarantee shall be in the format as specified by BRPL.

10.02 Contract performance bank guarantee of total 10% of the contract price shall be submitted within 15 days of award of contract with the validity till completion of the contract period.

10.03 Contractor shall submit the performance bank guarantee equivalent to the 10% of the contract value at the time of claiming the last payment as per clause no. 8.0(C) (Terms of payment and billing – SUPPLY), with the validity of the bank guarantee till Defect Liability Period plus 3 months towards Claim period.

11.0 Forfeiture

11.01 Each Performance Bond established under Clause 10.0 shall contain a statement that it shall be automatically and unconditionally forfeited without recourse and payable against the presentation by BRPL of this Performance Bond, to the relevant bank referred to above, together with a simple statement that supplier has failed to comply with any term or condition set forth in the Contract.

11.02 Each Performance BG established under will be automatically and unconditionally forfeited without recourse if BRPL at its sole discretion determines that supplier has failed to comply with any term or condition set forth in the contract.

12.0 Release

All Performance Bonds will be released without interest within seven (7) days from the last date up to which the Performance Bond has to be kept valid (as defined in Clause 10.0) except for the case set forth in Clause 21.0.

13.0 Guarantee of Performance

The bidder shall stand guarantee that the equipment and material supplied/service or work rendered under the contract is free from design, manufacturing, material, construction, erection & installation and workmanship & quality defects and is capable of its due, rated and intended quality performance, as an integrated product delivered under the contract for a specific period termed as Guarantee Period. The bidder should also guarantee that the equipment/material is new and unused except for the usage required for the tests and checks required as part of quality assurance.

14.0 Guarantee Period/Defects Liability Period

The Guarantee Period will be equipment/ service/ work specific and shall be as specified in the Technical Specifications for the equipment/ material/ service/ work and where Technical specifications are not part of contract documents or guarantee period is not specified in the Technical specifications, the guarantee period shall be as per the Special Terms and Conditions of the Contract. In case of no mention of the guarantee period in Technical specifications, Defect liability period will be 12 Months from the Date of Commissioning.

If during the defects liability period any materials/ items are found to be defective, these shall be replaced or rectified by the bidder at his own cost within 30 days from the date of receipt of intimation.

Cost of repairs on failure in Guarantee Period:

The cost of repairs/ rectification/ replacement, apart from the actual cost of repairs/ rectification/ replacement is also inclusive of all bidder costs of required transportation, site inspection/ mobilization/ dismantling and re-installation costs as applicable, to be borne by the bidder. The bidder has to ensure that the interruption in the usage of intended purpose of the equipment is minimized to the maximum extent In lieu of the time taken for repairs/ rectification/ replacement.

15.0 Latent Defect:

Hidden defects in manufacturing or design of the product supplied and which could not be identified by the tests conducted but later manifested during operation of the equipment are termed as latent defects. Bidder shall further be responsible for 'free replacement' for another period of FIVE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.

16.0 Support beyond the Guarantee Period

The Bidder shall ensure availability of spares and necessary support for a period of at least 10 years post completion of guarantee period of equipment/ technology supplied against this contract. BRPL shall be duly intimated by the Vendor of End of Life Support for the product/ technology supplied at least 12 months in advance.

17.0 Return, Replacement or Substitution

BRPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BRPL may at its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BRPL, or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case BRPL shall furnish proof to Supplier of the cost of such substitute purchase. In

either case, all costs of any replacement, substitution, shipping, labour and other related expenses incurred in connection with the return and replacement or for the substitute purchase of a Commodity hereunder should be for the account of Supplier. BRPL may set off such costs against any amounts payable by BRPL to Supplier. Supplier shall reimburse BRPL for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid.

18.0 Effective Date of Commencement of Contract:

The date of the issuance of the Letter of Acceptance/Purchase Order shall be treated as the effective date of the commencement of Contract.

19.0 Time – The Essence of Contract

The time and the date of completion of the "Supply"" as stipulated in the Letter Of Acceptance / Purchase order issued to the Supplier shall be deemed to be the essence of the "Contract". The Supply has to be completed not later than the aforesaid Schedule and date of completion of supply.

20.0 The Laws and Jurisdiction of Contract:

The laws applicable to this Contract shall be the Laws in force in India. 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 adjudication by arbitration. The arbitration shall be undertaken by the sole arbitrator jointly appointed by the parties. In case the parties fail to arrive at consensus to appoint the sole arbitrator, either party may approach the Court for appointing an arbitrator under Section 11 of the Arbitration and Conciliation Act, 1996 and the award of the said sole arbitrator, 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 (as amended up to date) and the venue of such arbitration shall be the city of New Delhi only. The Arbitration shall be conducted in English language only. The courts at Delhi shall have the exclusive jurisdiction over the subject matter of Arbitration/dispute. The cost of the Arbitration shall be equally shared by the parties as per directions of the Sole Arbitrator.

21.0 Events of Default

21.01 Events of Default. Each of the following events or occurrences shall constitute an event of default ("Event of Default") under the Contract:

(a) Supplier fails or refuses to pay any amounts due under the Contract;

(b) Supplier fails or refuses to deliver Commodities conforming to this RFQ/ specifications, or fails to deliver Commodities within the period specified in P.O. or any extension thereof

(c) Supplier becomes insolvent or unable to pay its debts when due, or commits any act of bankruptcy, such as filing any petition in any bankruptcy, winding-up or reorganization proceeding, or acknowledges in writing its insolvency or inability to pay its debts; or the Supplier's creditors file any petition relating to bankruptcy of Supplier;

(d) Supplier otherwise fails or refuses to perform or observe any term or condition of the Contract and such failure is not remediable or, if remediable, continues for a period of 30 days after receipt by the Supplier of notice of such failure from BRPL.

22.0 Consequences of Default

(a) If an Event of Default shall occur and be continuing, BRPL may forthwith terminate the Contract by written notice.

(b) In the event of an Event of Default, BRPL may, without prejudice to any other right granted to it by law, or the Contract, take any or all of the following actions;

(i) present to Bank for forfeiture to the relevant bank the Performance Bond;

(ii) Purchase the same or similar Commodities from any third party; and/or

(iii) Recover any losses and/or additional expenses BRPL may incur as a result of Supplier's default.

23.0 Liquidated Damages

23.01 If supply of items / equipment is delayed beyond the supply schedule as stipulated in LOI/PO, then the Supplier shall be liable to pay the Purchaser for delay a sum of 0.5% (half percent) of the total price for every week of delay or part thereof for undelivered units.

23.02 The total amount for delay under the contract will be subject to a maximum of ten percent (10%) of the total contract value.

23.03 The Purchaser may, without prejudice to any method of recovery, deduct the amount for such damages from any amount due or which may become due to the Supplier or from the Performance Bond or file a claim against the supplier. The levy payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Supply on time or from any other part of his obligation and liabilities under the Contract. Once the maximum is reached, the Company reserves the right for termination of contract without any liabilities to the Company.

In the event of an extension of time being granted by the EIC, in writing for the Completion of the works, this clause shall be applicable after the expiry of such an extended period.

24.0 Statutory variation in Taxes and Duties

The total order value shall remain **FIRM** within stipulated delivery period and shall <u>not</u> be adjusted on account of any price increase/variations in commodities & raw materials. However Statutory Taxes, duties and Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period shall be borne by BRPL on submission of necessary documents claiming such variation. The variation will be applicable only on such value wherever price breakup of same is submitted by vendor/available in PO/ WO.

25.0 Force Majeure

25.01 General

An "Event of Force Majeure" shall mean any event or circumstance not within the reasonable control directly or indirectly, of the Party affected, but only if and to the extent that:

(i) Such event or circumstance materially and adversely affects the ability of the affected Party to perform its obligations under this Contract, and the affected Party has taken all reasonable precautions, due care and reasonable alternative measures in order to prevent or avoid the effect of such event on the affected party's ability to perform its obligations under this Contract and to mitigate the consequences thereof.

(ii) For the avoidance of doubt, if such event or circumstance would not have materially and adversely affected the performance of the affected party had such affected party followed good industry practice, such event or circumstance shall not constitute force majeure.

(iii) Such event is not the direct or indirect result of the failure of such Party to perform any of its obligations under this Contract.

(iv) Such Party has given the other Party prompt notice describing such events, the effect thereof and the actions being taken in order to comply with above clause.

25.02 Specific Events of Force Majeure subject to the provisions of above clause, Events of Force Majeure shall include only the following to the extent that they or their consequences satisfy the above requirements:

(i) The following events and circumstances:

a) Effect of any natural element or other acts of God, including but not limited to storm, flood, earthquake, lightning, cyclone, landslides or other natural disasters.

b) Explosions or fires

(ii) War declared by the Government of India, provided that the ports at Mumbai are declared as a war zone.

(iii) Dangers of navigation, perils of the sea.

25.03 Notice of Events of Force Majeure If a force majeure event prevents a party from performing any obligations under the Contract in part or in full that party shall:

i) Immediately notify the other party in writing of the force majeure events within 7(seven) working days of the occurrence of the force majeure event

ii) Be entitled to suspend performance of the obligation under the Contract which is affected by force majeure event for the duration of the force majeure event.

iii) Use all reasonable efforts to resume full performance of the obligation as soon as practicable

iv) Keep the other party informed of all such efforts to resume full performance of the obligation on a regular basis.

v) Provide prompt notice of the resumption of full performance or obligation to the other party.

25.04 Mitigation of Events of Force Majeure Each Party shall:

(i) Make all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of any delay occasioned by an Event of Force Majeure including recourse to alternate methods of satisfying its obligations under the Contract;

(ii) Use its best efforts to ensure resumption of normal performance after the termination of any Event of Force Majeure and shall perform its obligations to the maximum extent practicable as agreed between the Parties; and

(iii) Keep the other Party informed at regular intervals of the circumstances concerning the event of Force Majeure, with best estimates as to its likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event of Force Majeure.

25.05 Burden of Proof In the event that the Parties are unable in good faith to agree that a Force Majeure event has occurred to an affected party, the parties shall resolve their dispute in accordance with the provisions of this Agreement. The burden of proof as to whether or not a force Majeure event has occurred shall be upon the party claiming that the force majeure event has occurred and that it is the affected party.

25.06 Termination for Certain Events of Force Majeure. If any obligation of any Party under the Contract is or is reasonably expected to be delayed or prevented by a Force Majeure event for a continuous period of more than 3 months, the Parties shall promptly discuss in good faith how to proceed with a view to reaching a solution on mutually agreed basis. If a solution on mutually agreed basis cannot be arrived at within a period of 30 days after the expiry of the period of three months, the Contract shall be terminated after the said period of 30 days and neither Party shall be liable to the other for any consequences arising on account of such termination.

25.07 The Purchaser may terminate the contract after giving 7(seven) days notice if any of following occurs:

a) Contractor fails to complete execution of works within the approved schedule of works, terms and conditions

b) In case the contractor commits any Act of Insolvency, or adjudged insolvent
c) Has abandoned the contract
d) Has failed to commence work or has suspended the progress of works
e) Has failed to proceed the works with due diligence and failed to make such due progress

25.08 Limitation of Force Majeure event. The Supplier shall not be relieved of any obligation under the Contract solely because cost of performance is increased, whether as a consequence of adverse economic consequences or otherwise.

25.09 Extension of Contract Period due to Force Majeure event The Contract period may be extended by mutual agreement of Parties by way of an adjustment on account of any period during which an obligation of either Party is suspended due to a Force Majeure event.

25.10 Effect of Events of Force Majeure. Except as otherwise provided herein or may further be agreed between the Parties, either Party shall be excused from performance and neither Party shall be construed to be in default in respect of any obligations hereunder, for so long as failure to perform such obligations shall be due to an event of Force Majeure."

26.0 Transfer and Sub-Letting

The Supplier shall not sublet, transfer, assign or otherwise part with the Contract or any part thereof, either directly or indirectly, without prior written permission of the Purchaser.

27.0 Recoveries

When ever under this contract any money is recoverable from and payable by the bidder, the purchaser shall be entitled to recover such sum by appropriating in part or in whole by detecting any sum due to which any time thereafter may become due from the supplier in this or any other contract. Should the sum

be not sufficient to cover the full amount recoverable the bidder shall pay to the purchaser on demand the remaining balance.

28.0 Waiver

Failure to enforce any condition herein contained shall not operate as a waiver of the condition itself or any subsequent breach thereof.

29.0 Indemnification

Notwithstanding contrary to anything contained in this RFQ, Supplier shall at his costs and risks make good any loss or damage to the property of the Purchaser and/or the other Supplier engaged by the Purchaser and/or the employees of the Purchaser and/or employees of the other Supplier engaged by the Purchaser whatsoever arising out of the negligence of the Supplier while performing the obligations under this contract.

30.0 Documentation:

The Bidder's shall procure all equipment from BRPL approved sources as per attached specifications. The Bidder's shall submit 5 copies of Material/Type Test Certificates, O&M Manuals, and Approved & As-built drawings. The Bidder's shall ensure for the strict compliance to the specifications and Field Quality Procedures issued by BRPL Engineer in-charge.

31.0 Commissioning Spares

Commissioning Spares shall be deemed to be included in the quoted prices.

32.0 Limitation on Liability

Notwithstanding anything to the contrary in the Purchase Order but subject to clause 33 Consequential Damages, the aggregate liability of either Party to the other Party in respect of all claims for Liabilities arising under the Purchase Order shall not exceed the aggregate value of the Purchase Order(s) under which the Liabilities arose except that such limitation shall not apply to the Contractor's indemnification obligations in accordance with clause 29 Indemnification herein.

33.0 Consequential Damages

Notwithstanding anything to the contrary in the Purchase Order, except for breach of obligations under Non-disclosure and except as expressly provided in a Purchase Order, in no event, as a result of breach of contract or breach of warranty or otherwise, shall either Party hereto or either Party's Affiliates or sub Contractors, be liable under the Purchase Order to the other Party for any consequential, special, indirect, exemplary or incidental damages, and/or for any lost profits, goodwill or revenues of such Party, howsoever arising, before or after Acceptance of the Goods and whether or not such damages are foreseeable.

SECTION V
PRICE FORMAT – SUPPLY

S. No.	Description	UOM	Qty	Basic (Rs)	Freight (Rs)	GST (Rs)	Unit Landed (Rs)	Total Landed Cost (Rs)
1	CNDCTR,ACSR GOAT UNINSUL	M	50					
2	CLMP,PARRL GROV,ACSR GOAT CNDCTR	EA	12					
3	STRIP,MTLC,EARTHNG;50X6MM;MS GALVANIZED	KG	700					
4	LUG,CRIMPING;630MM2;HVYDTY LG BRL	EA	16					
5	Number plate, PLT,MTLC, RECTANGULAR;AL;NUMBER,	EA	6					
6	Danger Plate, BRD,SIGN,DANGER 66000V	EA	8					
7	Phase Plate in Set of red Blue & Yellow, PLT,MTLC,RECTANGULAR;PHASE R Y B	SETS	12					
8	TAPE,SFTY BARR,150MM;PVC;DNGER 66KV BSES (WARNING TAPE)	M	1780					
9	TAG,SFTY,RCTNGL;AL;MTLC	NOS	90					
10	CVR,CBL;600X550X50MM;RCC	NOS	2968					
11	ARRSTR,ELEC,OUTDR ELEC;60KV;10KA	EA	12					
12	ANGLE,STRCTL,65MM;65MM;6MM;MS	MT	0.6					
13	CHNL,STRCTL,ISMC100;100MM;50mm;7.7mm	MT	5					
14	PI,SPL PUR,225MM;HDPE;PE80PN6;ROLLING	M	680					
15	MRKR,CBL;ELEC BAL MRKR PASSIVE	NOS	20					
16	Supply of MRKR,CBL;ELEC BAL MRKR ACTIVE	EA	12					
Total Material Cost (A)								

BOQ shall be read in conjunction with the Tender Document & General Design Criteria

Appendix- I

COMMERCIAL TERMS AND CONDITIONS - SUPPLY

Sl No	Item Description	AS PER BRPL	BIDDER'S CONFIRMATION
1	Validity	120 days from the due date of submission or amended due date of submission	
2	Price basis	a) **Firm**, FOR Delhi store basis. Prices shall be inclusive of all taxes & duties, freight up to Delhi stores. b)Unloading at stores - in vendor's scope c) Transit insurance in Bidder scope	
3	Payment terms	a. 80 % against R/A bills within 30 days against receipt of material at site. b. 10% pro-rata after installation/erection of equipment c. 10% pro-rata after completion of successful acceptance testing, commissioning and Handing Over of the entire Installation and duly certified by BRPL Project-in-charge and submission of BG of 10% of contract value valid up to Defect Liability period i.e. 12 months from the date of Handing over of entire Installation Plus 3 months towards Claim period	
4	Completion time	6 months from the date of LOI/PO	
5	Defect Liability period	12 months from the date of Handing over of entire Installation.	
6	Liquidated damages	0.5% of total price for every week delay subject to maximum of 10% of total contract value	
7	Contract Performance Bank Guarantee	10% (Ten percent) of the Contract Price valid up to completion period/handing over.	
8	Performance Bank Guarantee	10% (Ten percent) of the Contract Price valid up to Defect Liability Period plus 3 months towards claim period.	

SECTION VI

GENERAL TERMS & CONDITIONS - ERECTION, TESTING & COMMISSIONING

1.0 DEFINITIONS and INTERPRETATION

The following terms shall have the following meanings:

1.1 "Company": means BSES Rajdhani Power Ltd, a company incorporated under the Companies Act 1956 and having its office at BSES Bhawan, Nehru Place, New Delhi 110 019, which expression shall include its authorized representatives, agents, successors and assigns.

1.2 "Contractor": shall mean the successful Bidder / 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 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. "Contract Specification" shall mean the Technical specification of the work as agreed by you and description of work as detailed in Annexure-I enclosed herewith and all such particulars mentioned directly/ referred to or implied as such in the contract.

1.5 "Site" shall mean the working location in BRPL area. Under this tender, working location shall be as mentioned elsewhere.

1.6 ENGINEER IN CHARGE: "Engineer In-charge" means the Company's authorized representative for the purpose of carrying out the work.

2.0 EXAMINATION OF SITE AND LOCAL CONDITIONS:

The contractor is deemed to have visited the site of the work and ascertained therefore all site conditions and information pertaining to his work. The company shall not accept any claim whatsoever arising out of the difficult site/terrain/local conditions, if any.

3.0 LANGUAGE AND MEASUREMENT:

The Contract issued to the contractor by the company and all correspondence and documents relating to the Contract placed on the Bidder shall be written in English language.

Metric System shall be followed for all dimension, units etc.

4.0 SCOPE OF WORK:

The scope includes BOQ supply items including FAT at the factory location before dispatch, it includes material dispatch and receipt at site inclusive of installation, testing, commissioning and handing over to owner on single point responsibility basis. Schedule of work shall be as per BOQ attached herewith.

All the labour, cranes, tool and tackles, and technical supervision etc. are including in your scope of work for dismantling of Monopoles, 66 KV conductors and its accessories. Skilled set of supervisor, laborers shall be engaged in the work who have prior experience of working at significant heights (15+ metres). Adequate number of engineers, supervisors and laborers shall be posted at site and the list of the same along with certificate of Qualification of technical staff should be submitted by the Bidder to the Engineer In Charge for checking the adequacy immediately (within 2 weeks) after award of contract.

100% Barricading shall be provided during Underground cable laying works at site. Cable shall be pulled necessarily with Winch Machine with complete set of cross rollers, side rollers etc. All necessary safety measures should be taken while executing 66 KV cable pulling at site location. Necessary T&P shall be made available before executing the works at site.

The Bidder shall also make his own arrangement for the accommodation/ conveyance requirements for its staff at site. Company will be provided at site the adequate open space for Bidder's site store for storing the materials, tools, tackles etc. The entire Bidder's storage will be within the site premises. All the incoming and outgoing materials, equipment, tools, tackles and any other items related to said work shall be entered into the register kept for this purpose and shall be in the custody of Bidder, however company does not hold any responsibility for any loss or damage of Bidder's material etc.

All loading/ unloading, of materials at work-site shall be Bidder's 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 Bidder to keep the materials safe from sun & rain by providing covered storage space as well as using tarpaulins.

The Bidder at his own shall arrange Water and Electricity Power at his cost.

Special Instruction:-

a. All Erection tools and tackles and testing equipment shall be available with Bidder in event of order.

b. Penalty clause shall be incorporated in case any of workmen of Bidder is found violating safety protocol as per GCC-ETC LD Clause no 15.

   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.

NOTE: Electrical inspection fees for Scheme no. ES23SH1021 of Rs. 7,500/- + GST extra will be borne by BRPL to finalized vendor through the tender.

5.0 RATES:

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

The cost of insurance during loading/unloading of materials/ equipments during its storage and handling/erection at site for installation is included in the Bidder's scope and value shall be included in the unit rates finalized.

The unit rates finalized is also inclusive of barricading and watch & ward during execution and no separate charges shall be paid for the same.

6.0 TAXES AND DUTIES:

Prices are inclusive of all taxes and duties including GST as applicable. However, IT as per applicable rate will be deducted from your bills as Tax Deduction at Source (TDS).

The total order value shall remain **FIRM** within stipulated delivery period and shall **not** be adjusted on account of any price increase/ variations in labour. However Statutory Taxes, duties and Levies imposed by Competent

Authorities by way of fresh notification(s) within the stipulated delivery period shall be borne by BRPL on submission of necessary documents claiming such variation. The variation will be applicable only on such value wherever price breakup of same is submitted by vendor/available in PO/ WO.

1. As Per Notification No. 39/2021 – Central Tax dated 21st December, 2021 w.e.f 01/01/2022 registered person (ie, Recipent/Purchaser) can avail tax credit on those invoices only which have been reflected in GSTR 2A or GSTR2B (it means 100% matching of invoice is required). Also, GST has to be deposited by Supplier/Contractor by filing of GSTR- 1 and GSTR-3B.
2. In view of above, if the same is not complied with by the supplier/contractor and the Recipient/Purchaser is not in position to avail / utilize Input Tax Credit due to non-compliance or non-filing of GSTR-1 and GSTR-3B for the month/quarter (as applicable) in which the supply was made, then Recipient/Purchaser has right to hold 100% GST amount from next payment due of the subsequent month till the time default is not cured.
3. For releasing of the payment kept on hold on account of GST supplier shall submit payment proof i.e GST Portal screenshot reflecting name of Recipient/Purchaser alongwith GSTR-1 and GSTR-3B for month/quarter (as applicable) in which the same has been discharged. Payment shall not be released, till the time proof of payment of GST as mentioned above is not submitted.
4. Further, the recipient/purchaser shall also be entitled to recover any financial loss incurred (including tax, interest and penalty) due to non-compliance or non-filing of GSTR-1 and GSTR-3B by the supplier.
5. In case where delivery of goods is being made on FOR site basis, the Supplier is responsible to comply with rules applicable for E-way bill. Any violation in provision of E-way Bill will attract penalty and seizure of Transit Material. Any Penalty and Pre-Deposit due to violation of rules/provision shall be paid and borne by Supplier. Also, Supplier is responsible for releasing of goods from Authority whether CGST/SGST. Delay in supply due to seizure of goods shall attract liquidated damages as per Order / Contract provisions. "

7.0 TERMS OF PAYMENT (Erection, Testing & Commissioning)

Payment shall be made as under:

i) 80% pro-rata of total installation value shall be payable against R/A bills payable within 45 days after installation / erection of material at site duly certified by Engineer in charge.

ii) 10% pro-rata of total installation value shall be payable against R/A bills payable within 30 days after testing & commissioning of material at site.

iii) 10% of contract value payable after completion of successful acceptance testing, commissioning and handing over of complete systems duly certified by Engineer in charge, submission of Electrical Inspector Clearance Certificate & submission of Performance Bank Guarantee of 10% of contract value valid up to defect liability period i.e. 12 months from the date of Handing over of entire Installation Plus 3 months towards Claim period.

All the Bank guarantees shall be submitted as per Company's format (Appendix I) and from any scheduled Bank approved by Company.

Company shall make payments of the bills either; By crossed cheque or by electronic transfer directly to Bidder's designated bank account.

8.0 Guarantee of Performance

The bidder shall stand guarantee that the equipment and material supplied/service or work rendered under the contract is free from design, manufacturing, material, construction, erection & installation and workmanship &

quality defects and is capable of its due, rated and intended quality performance, as an integrated product delivered under the contract for a specific period termed as Guarantee Period. The bidder should also guarantee that the equipment/material is new and unused except for the usage required for the tests and checks required as part of quality assurance.

9.0 Guarantee period/Defect Liability period:

The Guarantee Period will be equipment/ service/ work specific and shall be as specified in the Technical Specifications for the equipment/ material/ service/ work and where Technical specifications are not part of contract documents or guarantee period is not specified in the Technical specifications, the guarantee period shall be as per the Special Terms and Conditions of the Contract. In case of no mention of the guarantee period in Technical specifications, Defect liability period will be 12 Months from the Date of Commissioning.

If during the defects liability period any materials/ items are found to be defective, these shall be replaced or rectified by the bidder at his own cost within 30 days from the date of receipt of intimation.

10.0 Performance Guarantee

10.01 Bank guarantee shall be drawn in favour of "BSES Rajdhani Power Ltd" as applicable. The performance Bank guarantee shall be in the format as specified by BRPL.

10.02 Contract performance bank guarantee of total 10% of the contract price shall be submitted within 15 days of award of contract with the validity till completion of the contract period.

10.03 Bidder shall submit the performance bank guarantee equivalent to the 10% of the contract value at the time of claiming the last payment as per clause no. 7.0 (iii) (TERMS OF PAYMENT (Erection, Testing & Commissioning)), with the validity of the bank guarantee till Defect Liability Period i.e. 24 months from the date of Handing over of entire Installation plus 3 months.

11.0 COMPLETION PERIOD

You are required to mobilize your manpower and Tools & Tackles and furnish a list of equipments to be used for erection and commence the execution activity as per instructions of Engineer In-charge. The entire Erection, Testing & Commissioning work should be completed within 6 months from the date of issue of LOI/WO. 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. You shall submit a weekly progress report to Engineer In charge.

12.0 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, you 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 Bidder's risk and costs.

13.0 COMMISSIONING & ACCEPTANCE TEST:

After completion of the work, the Bidder shall conduct trial run/ operation in the presence of Engineer In charge. During such trial run the system shall be operated under the supervision of the Bidder. If any rectification/modification required during this period the Bidder shall do all necessary measures.

On satisfactory completion of above, the system shall be deemed to have energized and placed in commercial operation. The Engineer-in-Charge will issue an acceptance certificate.

14.0 WORK COMPLETION CERTIFICATION, HANDING OVER.

The work carried out by the Bidder under this order has to be certified by Engineer In-charge for satisfactory completion of work allotted to the Bidder with respect to specifications / Field Quality Procedures as per applicable standards. In case of modification/correction to be carried out, Bidder shall carry out the said modifications/correction without additional cost. The Bidder 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 Bidder 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 Bidder as certified by Engineer In-Charge. Bidder must submit a periodical material reconciliation statement in the approval format with every Running Bill raise by him or end of every month whichever is earlier. The Bidder 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.

15.0 PENALTY AND LIQUIDATED DAMAGES

15.1 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 Bidder, the Bidder shall pay to the Company liquidated damages.

If the Bidder 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 0.5 % of the total order value for each week or part there of delay until the actual date of completion up to a maximum deduction of 10% of total order value. The levy payment or deduction of such damages shall not relieve the Bidder from his obligation to complete the Works on time or from any other part of his obligation and liabilities under the Contract. Once the maximum is reached, the Company reserves the right for termination of contract without any liabilities to the Company.

In the event of an extension of time being granted by the EIC, in writing for the Completion of the works, this clause shall be applicable after the expiry of such an extended period.

Engineer In charge should specifically mention the amount of LD levied on the bill of Bidder.

16.0 SAFETY REGULATIONS & SAFETY CODE:

The Bidder shall indemnify the Company from any consequence arising due to Bidder's failure in respect to safety compliance.

First Aid facilities at easily accessible place shall be provided by the Bidder at his own cost as per provisions of Labor act or as advised by the Company wherever works are carried out.

All critical injuries shall be reported promptly to the Company. The report shall cover type, nature, cause, physician's report and actions for prevention of those types again.

To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the Bidder shall be open to inspection by the Company.

The cost so incurred by the Bidder in providing for safety standards and requirements as above shall be deemed to be included in the rates quoted for various items under the scope of Contract and no extra amounts shall be payable to the Bidder on this account.

The Bidder shall furnish to the Company within seven days from issue of Work Order whichever is earlier, for approval of Company, the proposed safety program on how it intends to implement the safety procedures and precautions to ensure that the site is accident free.

The Bidder shall ensure adequate safety precautions at site as required under the law of the land and shall be entirely responsible for the complete safety of their workman as well as other workers at site and premises. The Bidder shall not deploy any worker below the age of 18 years.

The Bidder 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 Bidder that all safety requirements are followed by the employees and staff of the sub-vendor.

The Bidder employing two hundred employees or more, including contract workers, shall have a safety coordinator in order to ensure the implementation of safety requirements of the contract and a Bidder with lesser number of employees, including contract workers, shall nominate one of his employees to act as safety coordinator 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 Bidder 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 Bidder shall immediately submit a statement of the same to the owner and the safety officer, containing the details of the accident, any injury or causalities, extent of properly damage and remedial action taken to prevent recurrence and in addition, the Bidder shall submit a monthly statement of the accidents to the owner at the end of each month.

17.0 STATUTORY OBLIGATIONS:

The Contractor shall ensure the due compliance of all the applicable statutory acts, including but not limited to the following acts, where special attention of the Contractor is required to be drawn towards the compliance of provision (along with the latest amendments/additions) including any statutory approval required from the Central/State Governments, Ministry of Labour.

- The Child Labour (Prohibition and Regulation) Act, 1986.
- The Agreement Labour (Regulation and Abolition) Act, 1970.
- The Employee's Pension Scheme, 1995.
- The Employee's Provident Funds and miscellaneous provisions Act, 1952.
- The Employees State Insurance Act, 1948.
- The Industrial Disputes Act, 1947.
- The Maternity Benefit Act 1961.
- The Minimum Wages Act, 1948.
- The Payment of Bonus Act, 1965.

- The Payment of Gratuity Act, 1972.
- The payment of Wages Act, 1936.
- The Delhi Shops & Establishment Act, 1954.
- The Workmen's Compensation Act. 1923.
- The Company's Liability Act, 1938.
- The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013
- The Delhi Preservation of Trees Act 1994

Further the Contractor shall be liable to comply with all the amendment in existing acts / upcoming new comprehensive labour acts/codes related to applicable labour laws.

The Contractor shall, prior to commencement of the jobs under this agreement, furnish to the Company the Registration No and Codes of permanent Provident Fund and ESI of its employees.

Contractor shall bear the entire responsibility, liability and risk relating to coverage of its workforce under different statutory regulations including Workmen's Compensation Act, ESI Act, Factories Act 1948, the Agreement Labour (Regulation and Abolition) Act 1970, as amended from time to time, and any other relevant laws/regulations as the case may be. Contractor shall also be solely responsible for the payment of all benefits such as Provident Fund, Bonus, Retrenchment Compensation, leave etc. applicable as per the various statutory laws/regulations and shall keep the Company indemnified in this regard against any claim. The Company shall be entitled to deduct from any money due to or become due to Contractor, any money paid or payable by way of compensation as aforesaid or cost or expenses in connection with any claims thereto and Contractor shall abide by the decision of the Company as regards the sum payable by Contractor under the provisions of this clause

The Contractor shall obtain all registration/permissions licenses etc., which are/may be required under any labour or other legislations for providing the services under this Agreement.

In case it is desired by any Labour authorities to produce the records with respect to salary/ PF/ESI/EDIL/Bonus etc., the said record/register will be made available by the Contractor.

The contractor shall follow all law of the land and prevailing orders issued by various Govt. Departments like Dept. of Power / DERC/ NGT/Dept. of Forest/ Dept. of Environment / DPCB / CPCB/ Court orders etc.

18.0 WORKMAN 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 Bidder 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 Bidder, the Bidder shall certify for the same.

The Bidder shall keep the company indemnified at all times, against all claims of compensation under the provision of Workmen Compensation Act 1923 and as amended from time to time or any compensation payable under any other law for the time being workman engaged by the Bidder/sub-contractor/sub-agent in carrying out the job involved under this work order 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 Bidder, moneys paid or payable by way of compensation as aforesaid or cost or expenses in connection with any claims thereto and the Bidder shall abide by the decision of the Company as to the sum payable by the Bidder under the provisions of this clause.

19.0 STAFF AND WORKMAN

It shall be responsibility of Bidder

(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 Labour 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 Labour 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 Bidder 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 Bidder.

(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.

20.0 INSURANCE

The contractor shall take suitable insurance policy for its men and materials (Term Insurance for life , GPA, Mediclaim policy, Workmen Compensation Policy etc.)as listed below for the resources deployed by him

a) Term Insurance for life:

Before commencing the execution of the work the Contractor shall take Term Insurance Policy for life for the staff engaged/deployed by them for the work under agreement, to insure against any loss of life which may occur during the agreement for the work of the Company. The policy shall have coverage of Rs. 10 Lakh.

b) Group Personal Accident Insurance:

Before commencing the execution of the work the Contractor shall take Accidental insurance policy for the staff engaged/deployed by him for the work under agreement, to insure against any loss of life which may occur during the agreement for the work of the Company. The policy shall have coverage of Rs. 5 Lakh (Table C Death + Permanent Total Disability + Partial permanent Disability due to external accidents). Permanent total disability coverage shall be 125% of the basic sum assured of Rs 5 Lakh.

The Contractor shall be responsible for on the spot same day claim settlement with the victim's legal heirs without waiting for settlement by insurance claim and without any liability on BRPL. The premium amount for both the above policies shall be borne by the Contractor. The Contractor shall furnish copy of policy within 15 days of start of work under the contract.

c) Medical Insurance Policy:

Contractor shall take a mediclaim policy including family floater of minimum sum assured value Rs. 2.00 lakhs for the resources who are not covered under ESI.

21.0 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.

22.0 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.

22.1 Measures related to the Tree Pruning, excavation near tree and construction & demolition:

A. Tree Pruning, Planning, Installation and Maintenance of Utility Apparatus in proximity to trees shall be done mandatorily by ensuring the following prescribed measures:

Notwithstanding anything stated in the tender document, work contract or any other communication issued related to the performance of the work order awarded, it is clarified that the vendor and its associate/employees/worker, during the performance of work under this work order(s), shall ensure full compliance of the provisions of all environment laws/rules/directions by any authority including judicial authority/ regulation related to excavation near tree and construction & demolition activity, and shall mandatorily comply the following instructions:

1) The permission of the Tree Officer shall have to be taken as a mandatory condition before the initiation of any civil work, which are likely to be made within a distance of 2mts from any existing tree. In case there is non-compliance of the aforesaid condition of taking permission from the Tree Officer, the same shall entail strict penalty. Contractors are advised to ensure due compliance with the directions.

2) Any exposed roots beyond 2 meters of the tree trunk, should be protected with dry sacking and backfilling must be done with a suitable manure mixture and/or the compost material mix as soon as possible on the completion of the works.

3) For any excavation to be carried out upto 3 meter from the tree trunk, manual methods (by use of hand) or by using trenchless techniques shall be preferred over use of a mechanical excavation.

4) No roots shall be cut during the excavation work.

5) Not to lean any materials against or chain mechanical plants to the trunk of the trees.

6) Avoid any soil contamination from oil, gasoline, paint and paint thinner or other chemicals.

7) All the electric wires and high tension cables and other apparatus relating to supply of electricity shall permanently be removed from the trees branches.

Records to be maintained by the supervisor to demonstrate adherence to the guidelines for excavation in Proximity to the Trees:

1) Ensure pre and post photography and videography of the site demarcated for the excavation work and the same shall not be deleted/removed until securing the prior permission of the Circle head O&M.

2) While digging and upon exposure to the roots- take immediate photographs of the same and report the matter to senior officers for further guidance.

If any unauthorized layering of other cables is being carried out at the digging site by some other agency/person, then immediately capture photographs of the same and inform the seniors, who shall take suitable legal actions, if required, which includes intimating to tree officer about such unauthorized laying of wires by such agency.

B. DUST MITIGATION MEASURES FOR CONSTRUCTION & DEMOLITION ACTIVITIES

Any construction/demolition/excavation related activity performed in furtherance of the performance of work under award, be undertaken only after ensuring the Dust Mitigation Measures prescribed as follows:

1) Dust/wind breaking walls of appropriate height around the periphery of the construction site.
2) Installation of Anti Smog Gun(s) (for >20,000 m2 built up area).
3) Tarpaulin or green net on scaffolding around the area under-construction and the building.
4) All vehicles including carrying construction material and construction debris of any kind should be cleaned and wheels washed.
5) All vehicles carrying construction material and construction debris should be fully covered and protected.
6) All construction debris and construction material of any kind should be stored on the site and not dumped on public roads or pavements.
7) No loose soil or sand or Construction & Demolition Waste or any other construction material which may cause dust, shall not be left uncovered.
8) No grinding and cutting of building materials in open area. Wet jet should be used in grinding and stone cutting.
9) Unpaved surfaces and areas with loose soil should be adequately sprinkled with water to suppress dust.

10) Roads leading to or at construction sites must be paved and blacktopped i.e., metallic roads (for >20,000 m2 built up area).
11) Construction and demolition waste should be recycled on-site or transported to authorized recycling facility and due record of the same should be maintained.
12) Every worker working on construction site and is involved in loading, unloading and carriage of construction material and construction debris should be provided with dust-mask to prevent inhalation of dust particle.
13) Arrangement should be provided for medical help, investigation and treatment to workers involved in the construction of building and carry of construction material and debris relatable to dust emission.
14) Dust mitigation measures shall be displayed prominently at the construction site for easy public viewing.
15) Ensure the compliance of all dust control measure.

It is clarified that BRPL has zero tolerance with respect to the non-compliance/breach of environment laws/rules/directions by any authority including judicial authority/ regulation. Accordingly, in case of breach by the vendor/its associate/employee/worker to the laws/rules as detailed above, shall be termed as serious breach to the terms of work order and BRPL shall be free to take all actions against vendor for such breach of contract including the termination of the said contract. Additionally, the vendor shall also be liable to indemnify BRPL/its Directors/Officers/Employees/Associates in full including the payment of all loss/penalties/compensation including environment compensation as imposed by any judicial/quasi-judicial citing/alleging such breach.

The vendor shall also be under a mandate to provide an Undertaking to BRPL, which includes that the excavation, tree pruning, construction and demolition work, if performed by such vendor, the same shall be in strict adherence of all environment laws/rules/directions by any authority including judicial authority/ regulation and all the measures provided in work order/tender under the head/title "Measures related to the Tree Pruning, excavation near tree and construction & demolition".

Format 1

Undertaking from the _____(Vendor- undertaking the excavation work)

I _____, Proprietor of M/s_____, having R/o. at _____

Has been awarded a work order no._____,dated_____, from BSES Rajdhani Power Limited (BRPL), to carry out digging/excavation work on the stretch of road detailed in the work order.

Details of the Road cutting permission are RCP no. _____ dated _____ valid from _____ to _____ on the stretch of road detailed in the work order.

I have read the Guidelines on Excavation (as enclosed) and understood the same in sense and sprit. I assure that I shall abide with the said guidelines along with the all other provision associated with laws relating to laying of cables under the said work order.

I do herby undertake that I shall be fully responsible for any violation of any kind and shall be liable for any cost consequences, penalty, liability, damages if imposed by any authority court citing/disputing the performance of the task.

I further undertake to indemnify BRPL its officers, directors, employees and associates from any cost consequences, penalty, liability, damages if imposed by any authority court citing/disputing the performance of the task.

I do herby agree and confirm that forming a part of work order/agreement and breach of this undertaking shall be termed as breach of the terms of the said work order/agreement.

I have read and understood the terms of this undertaking and submitting this undertaking out of my own accord and without any coercion.

Deponent

23.0 TEST CERTIFICATE & QUALITY ASSURANCE:

The Bidder shall procure all equipment from genuine sources as approved by the Company and as per Company specifications. The Bidder shall submit all the test certificates and joint inspection reports related to major equipment wherever applicable. The Bidder shall ensure for the strict compliance to the specifications and Field Quality Procedures issued by company / Engineer in-charge.

24.0 SUB-CONTRACTING / SUBLETTING:

BIDDER 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 Bidder assigns this work order, Bidder'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, Bidder 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:

Bidder 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 Bidder or its employees or agents of any of the provisions of this Work Order.
B. Any act or omission of Bidder or its employees or agents.
C. Any negligence or breach of duty on the part of Bidder, its employees or agents including any wrongful use by it or them of any property or goods belonging to or by COMPANY or any other third party at site including adjoining neighbors.

Bidder shall at all times indemnify COMPANY against all liabilities to other persons, including the employees or agents of COMPANY or Bidder 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 Bidder, if in the opinion of COMPANY, Bidder 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 sub-vendor agency to complete the work or any part thereof, 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 tender, the contractor shall be liable to COMPANY for any additional costs that may be incurred by COMPANY for the execution of the Work.

27. RISK & COST:

If the Contractor of fails to execute the work as per specification / as per the direction of Engineer's In-change within the scheduled period and even after the extended period, the contract shall got 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. ARBITRATION:

To the best of their ability, the parties hereto shall endeavor to resolve amicably between themselves all disputes arising in connection with the proposed Agreement. If the same remain unresolved, within fifteen (15) 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 a sole arbitrator to be appointed by the company. The decision of the arbitrator is final and binding upon both the parties. The arbitration proceeding shall be conducted in accordance with the provisions of the Indian Arbitration & Conciliation Act, 1996 and the venue of such arbitration shall be New Delhi only.

29. FORCE MAJEURE:

29.1 General:

An "Event of Force Majeure" shall mean any event or circumstance not within the reasonable control, of the Party affected, but only if and to the extent that:

(i) Such event or circumstance, despite the exercise of reasonable diligence, could not have been prevented, avoided or reasonably foreseen by such Party;

(ii) Such event or circumstance materially and adversely affects the ability of the affected Party to perform its obligations under this Contract, and the affected Party has taken all reasonable precautions, due care and reasonable alternative measures in order to prevent or avoid the effect of such event on the affected parties ability to perform its obligations under this Contract and to mitigate the consequences thereof. For the avoidance of doubt, if such event or circumstance would not have materially and adversely affected the performance of the affected party had such affected party followed good industry practice, such event or circumstance shall not constitute force majeure.

(iii) Such event is not the direct or indirect result of the failure of such Party to perform any of its obligations under this Contract; and

(iv) Such Party has given the other Party prompt notice describing such events, the effect thereof and the actions being taken in order to comply with above clause

29.2 Specific Events of Force Majeure:

Subject to the provisions of above clause, Events of Force Majeure shall include only the following to the extent that they or their consequences satisfy the above requirements:
The following events and circumstances:

a) Effect of any natural element or other acts of God, including but not limited to storm, flood, earthquake, lightning, cyclone, landslides or other natural disasters, and
b) Explosions or fires
c) Declaration of the Site as war zone.
d) Any order, regulation, directive, requirement from any Governmental, legislative, executive or judicial authority.

29.3 Notice of Events of Force Majeure
If a force majeure event prevents a party from performing any obligations under the Contract in part or in full, that party shall:

(i) Immediately notify the other party in writing of the force majeure events within 2 working days of the occurrence of the force majeure event

(ii) Be entitled to suspend performance of the obligation under the Contract which is affected by force majeure event for the duration of the force majeure event

(iii) Use all reasonable efforts to resume full performance of the obligation as soon as practicable

(iv) Keep the other party informed of all such efforts to resume full performance of the obligation on a regular basis

(v) Provide prompt notice of the resumption of full performance or obligation to the other party.

29.4 Mitigation of events of force majeure:

The Bidder shall:

(i) Make all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of any delay occasioned by an Event of Force Majeure, including applying other ways in which to perform the Contract;

(ii) Use its best efforts to ensure resumption of normal performance after the termination of any Event of Force Majeure and shall perform its obligations to the maximum extent practicable as agreed between the Parties; and Keep the Company informed at regular intervals of the circumstances concerning the event of Force Majeure, with best estimates as to its likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event of Force Majeure.

29.5 Burden of proof:
In the event that the Parties are unable in good faith to agree that a Force Majeure event has occurred to an affected party, the parties shall resolve their dispute in accordance with the provisions of this Contract. The burden of proof as to whether or not a force majeure event has occurred shall be upon the party claiming that the force majeure event has occurred and that it is the affected party.

29.6 Terminations for certain events of force majeure:

If any obligation of any Party under the Contract is or is reasonably expected to be delayed or prevented by a Force Majeure event for a continuous period of more than 1 (one) month during the Term of the Contract the Contract shall be terminated at the discretion of the Company and neither Party shall be liable to the other for any consequences arising on account of such termination.

30.0 SECRECY CLAUSE:

The technical information, drawing and other related documents forming part of work order and the information obtained during the course of investigation under this work order shall be the Company's executive property and shall not be used for any other purpose except for the execution of the work 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 work order.

This 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 Bidder during the executions of this work order, if any, immediately after they have been used for agreed purpose.
In the event of any breach of this provision, the Bidder shall indemnify the Company against any loss, cost or damage or claim by any party in respect of such breach.

31.0 TERMINATION

"During the course of the execution, if at any time BRPL observe and form an opinion that the work under the order is not being performed in accordance with the terms of this Agreement, BRPL reserves its right to cancel this Agreement giving 15 days notice mentioning the reason for the termination of the agreement and BRPL will recover all damages including losses occurred due to loss of time from Bidder.

32.0 QUALITY

Bidder shall ensure that strict quality is maintained and execution of works under the 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 Bidder shall maintain proper records of such tools, tackles, instruments and / or equipment.

33.0 LIABILITY OF BIDDERS

Subject to the due discharge of its obligations under the Contract and except in case of gross negligence or willful misconduct on the part of the Bidder or on the part of any person acting on behalf of the Bidder, with respect to any loss or damage caused by the Bidder to the Employer's property or the Site, the Bidders shall not be liable to the Employer for the following:

a) For any indirect or consequential loss or damage; and

b) For any direct loss or damage that exceeds:

(i) The total payments made and expected to be made to the Bidder under the Contract including reimbursements, if any; or

(ii) The insurance claim proceeds which the Bidder may be entitled to receive from any insurance purchased by the Bidder to cover such a liability, whichever is higher.

This limitation of liability shall not affect the Bidder's liability, if any, for damage to any third party, caused by the Bidder or any Person or firm acting on behalf of the Bidder in executing the Works.

Notwithstanding anything contained in the Contract, the Bidder shall not be liable for any gross negligence or willful misconduct on the part of the Employer or any of its affiliates, any Bidder, or any party, other than Bidder and/or, its directors, officers, agents or representatives or its affiliates, or Sub-vendor, or the Bidder or any third party engaged by it.

Notwithstanding anything contained in the Contract, including but not limited to approval by the Employer of any drawings, documents, Bidder list, supply of information or data or the participation of the Employer in any meeting and/or discussion or otherwise, shall not absolve the Bidder from any of its liabilities or responsibilities arising in relation to or under the Contract.

SECTION VII
SERVICE BOQ

BOQ

Scheme No: ES23SH1021

Shifting of 66 kV D/C O/H line to U/G (4 Nos of 3C X 300 Sq mm cables) from Down town Dist to 66kV Palam Grid for the ckts 220 kV Mehraulli to 66kV palam and 66kV Palam to Bijwasan due to Development of commercial land by DIAL.

SR.NO.	SERVICE CODE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	4060426	Transportation of electrical equipment from store/any site in Delhi to site of work in Delhi including loading and unloading at both ends manually.(Considering max lead of 50KM)	TRP	18		
2	4060425	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 inclding loading and unloading at both ends by using T & P such as Tripod/cranes etc.(Considering max lead of 50KM)	TRP	22		
3	4060427	Transportation of Empty cable drum from site to site or from site to store any where in Union teritory of Delhi.	TRP	14		
4	4060371	Digging of cable trench as per specification and drawings. Rate is inclussive of digging and backfilling. Measurement shall be as per actual depth excavated. For Rocky Soil	CUM	835		
5	4060369	Digging of cable trench as per specification and drawings. Rate is inclussive of digging and backfilling. Measurement shall be as per actual depth excavated . For Dense Carpeted bituminous Road.	CUM	424		
6	4060368	Digging of cable trench as per specification and drawings. Rate is inclussive of digging and backfilling. Measurement shall be as per actual depth excavated . For Ordinary Bituminous/C.C.Road.	CUM	432		
7	4060379	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	90		
8	4060385	Digging of test pits of requried size(not lessthan 1/2 Mtr. Wide at site for identification of cable route). Relevent volume shall be deducted from quantities of same item of cable digging For Hard Rocky Soil	EA	22		
9	4060383	Digging of test pits of requried size(not lessthan 1/2 Mtr. Wide at site for identification of cable route). Relevent volume shall be deducted from quantities of same item of cable digging For Dense carpeted bituminous road / CC Road	EA	16		

10	4060388	Laying of underground 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 66 KV three core cable Running Mtr	M	4000		
11	4060208	Laying of MS flat in the excavatd trench including risers, equipment earthing, overlapping of MS flat at the joints by twice of its width and welding of over lapping and cross joints including supply of electrodes, red oxide/bitumin compound , paint etcand Laying of GI earth strip for equipment earthing, along the wall, trench, cable trays etc including fabrication of supports/cleats and fixing with wall bolts, welding works, painting of earth strip and riser with red oxide paint/bitumin compound and final. For 50X6 sqmm	M	200		
12	4060353	Providing and laying in position specified grade of reinforced cement concrete excluding the cost of shuttering,centring,finishing and reinforcement-All work upto plinth level : 1:2:4 (1cement :2 coarse sand :4 graded stone agg.20mm nominal size.)	CUM	22		
13	4060355	Shoring & Shuttering i/c.strutting,propping etc.and removal of form for Foundations,footings,bases of columns etc.for mass concrete as per site requirement complete.	SQM	90		
14	3005531	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe .Laying by Pneumatic Jack Hammer Road Cutting.laying . 200mm dia.	M	440		
15	4060373	Providing and Laying Sand cushioning for cable route as per BRPL/BYPL specification and drawing.	CUM	427		
16	4060372	Removal of Malba including Loading / Unloading on own vehicle. The payment shall be restricted to the quantity of sand laid.	CUM	564		
17	4060389	Extra for handling of 66KV Cable from cable drum. Note:If the Drum length is more than 250Mtr.	M	4000		
18	4060393	Laying of 8" O.D. GI pipe for crossing small Nallas in the cable route.	M	240		
19	4060000	Charges for carrying out Route survey 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	4000		
20	4060395	Charges for Hi pot test - Testing equipment to be provided by the contractor. For 66 KV cables	EA	8		
21	4060249	Fabrication of MS structure as well as galvanised for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's etc, cable supporting structure including supply of nuts and bolts, consumables , welding electrode, hacksaw blades etc. excluding supply of steel.	MT	5.6		

22	4060348	Erection of MS as well as galvanised structure for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's , ISO etc, cable supporting structure, 33kV/66 kV GI gantry structure , Tower Structure i/c consumables , welding electrode ,tack welding & hacksaw blades etc.	MT	5.6		
23	4060363	Supply and fixing of wire mesh fencing 2.65 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 no.Angle iron size 50x50x6 mm & MS strip 50 x 3 mm wire mesh 1"x3", 8 SWG wire to be used for wire-mesh with providing support at 1.25 distance.	SQM	119		
24	4060400	Painting of any M.S.Structure with one coat of Red oxide and two coats of AL.paint ISI marked including supply of paint by contractor.	KG	5600		
25	4060405	Digging of earth pit upto depth of 10 ft. inrocky/ semi rocky as per feasibility at site of embedding 600 x600mm earth plate with M.S Flate 50 x8 mm running the same through 3/4 " dia G.I. grouting pipe. Earth Plate to be covered by charcoal 200kg. And 100 Kg. Sodium chloride in the earth pit and refilling etc. NOTE: Charcoal, commonsalt, earth plate, G.I. Pipe, MS flat, Badarpur, Cement and bricks to be supplied by the contractor	EA	20		
26	4060409	Making of civil goomitties around GI earthpipe as per standard design of BSES. Supply of necessary bricks, cement, badarpur, sand, C1 cover of size 1'x1' and providing the same at the top of goomitties.	EA	20		
27	4060390	Grouting of cable mounting structure with cement concerete having ratio 1:3:6 including fixing with gantry structure. Badarpur, cement and stone ballast shall be supplied by contractor.Suitable for mounting 33/66 KV cable.	EA	6		
28	4060397	Mounting of 66KV,1x630sq.mm.XLPE cable with cable end box on the steel structure and fixing it with suitable wooden cleats (wooden cleats shall be supplied by contractor) i/c.its jumpering with the isolator as required.	EA	4		
29		Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in cement mortar 1 : 4 (1 cement : 4 coarse sand)	CUM	6		
30		12 mm cement plaster of mix 1:4 (1 cement : 4 fine sand)	Sqm	15		
31		15 mm cement plaster on rough side of single or half brick wall of mix 1:4 (1 cement : 4 fine sand)	Sqm	15		
32	4060276	Dismantling of 66 kV LA's with surge counter	EA	6		
33	4060340	Dismatling of cable structure and dismounting of 6Nos 1X1000MM cables end boxes from its structure after cutting the channel frame and dismentalling cleats & post insulators	EA	2		
34	4060399	Reseting, mounting and connection of cable structure and dismounting of 6Nos 1X1000MM cables end boxes from its structure and installtion of cleats & post insulators	EA	2		

35	4060329	Dismantling of ACSR GOAT Conductor, Earthwire, Insulator & Hardware Fittings i.e. Single Tension String Insulator fittings with single tension clamp for single GOAT conductor ,Single Tension String Insulator fittings with double tension clamp for twin GOAT conductor, Double Tension String Insulator fittings with single tension clamp for single GOAT conductor, Single Suspension String Insulator fittings with single drop/tension clamp for single GOAT conductor, Single Suspension String Insulator fittings with double drop/tension clamp for twin GOAT conductor, Single Suspension String Insulator fittings with single suspension clamp for single GOAT conductor, Single Suspension String Insulator fittings with double suspension clamp for twin GOAT conductor ,Bolted type 'T' Connector suitable for single GOAT conductor, Vibration Damper for GOAT Conductor, Repair Sleeve for GOAT, Mid span compression joint for ACSR GOAT, Rigid Type Spacers for twin GOAT PER CIRCUIT INCLUDING EARTH WIRE(PER CIRCUIT MEANS 3 CONDUCTORS AND ONE EARTH WIRE INCLUDING HARDWARE FITTINGS AND ACCESSORIES)	KM	4		
36	4060337	Dismantling of MS as well as galvanized structure for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's , ISO etc, cable supporting structure, 33kV/66 kV GI gantry and tower structure including consumables , welding electrode & hacksaw blades etc.	MT	11		
37	4060169	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 66 kV LA's with or without surge counter	EA	12		
38	4060401	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.40% qty for selected portion	M	890		
39		Installation of RCC Cable Cover	EA	2968		
40		Fixing of RCC Coffin for joint as per the specification of BRPL including sand filling inside the Coffin	EA	12		
41	4060391	Supply and fixing of Cable Route/Joint Marker as per approved drawing. For 33/66 KV cables.	EA	20		
42		Installation, testing and commissioning of passive ball markers (at every 50m)	EA	20		
43		Installation, testing and commissioning of active ball markers (for 66kV/33KV joint at every joint)	EA	12		
44	4060423	Supply of warning tape per BSES Design specification (Width=150mm, Thickness=0.3u)	M	1780		
45		Installation of Warning Tape as per the Specification of BRPL/BYPL	M	1780		
46	4060360	Providing and Fixing of circuit plates .	EA	4		
47		Supply of LIU 48 F fully loaded for Ofc	EA	4		
48		Making optical fibre end box(Splicing of 48F Optical Fiber Cable)	EA	4		
49		Installation of LIU(48F) including Patch	EA	4		
50	4060404	Laying of Optical Fiber cable	M	680		

51	4060403	Laying of 40mm dia HDPE Duct in open trench	M	400		
52		Dismantling of 66kV D/C (30-60) Deg_17BXA Monopole including cross arm.	EA	2		
53		Dismantled materials loading to vehicle at site and unloading at BSES Scrap stores/any other site in BSES,Delhi.	EA	2		
54	4060418	Supply of Optical Fiber Cable	M	680		
55	4060417	Supply of HDPE Duct-40mm	M	400		
56		Supply of RCC Coffin for Joint (Dimension of each coffin shall be suitable to cover complete joint)	EA	12		
57		Supply of joint Enclosure suitable for 48F (36 Single Mode and 12 Multi Mode) optical fiber cable and as per BRPL drawing.	EA	4		
58		Splicing of 48F(36 Single Mode and 12 Multi Mode) Optical Fiber Cable	EA	4		
59		Splicing joint termination of 48F(36 Single Mode and 12 Multi Mode) Optical Fiber Cable	EA	4		
		Total				
		GST 18%				
		Net Total				

Appendix-II

COMMERCIAL TERMS AND CONDITIONS – E/T/C

Sl No	Item Description	AS PER BRPL	BIDDER'S CONFIRMATION
1	Validity	120 days from the due date of submission or amended due date of submission	
2	Price basis	**Firm**. Prices shall be inclusive of all taxes & duties.	
3	Payment terms	a) 80% pro-rata of total installation value shall be payable against R/A bills payable within 45 days after installation/erection of material at site duly certified by Engineer in charge. b) 10% pro-rata of total installation value shall be payable against R/A bills payable within 30 days after testing & commissioning of material at site duly certified by Engineer in charge. c) 10% of contract value payable after completion of successful acceptance testing, commissioning and handing over of complete systems duly certified by Engineer in charge, submission of Electrical Inspector Clearance Certificate & submission of Bank Guarantee of 10% of contract value valid up to defect liability period i.e. 12 months from the date of Handing over of entire Installation Plus 3 months towards Claim period.	
4	Completion time	6 Months from date of LOI/Order	
5	Defect Liability period	12 months from the date of Handing over of entire Installation.	
6	Liquidated damages	0.5 % of the order value for each week or part there of delay until the actual date of completion up to a maximum deduction of 10% of total order value	
7	Contract Performance Bank Guarantee	10% (Ten percent) of the Contract Price valid up to completion period/handing over.	
8	Performance Bank Guarantee	10% (Ten percent) of the Contract Price valid up to Defect Liability Period i.e. 24 months from the date of Handing over of entire Installation plus 3 months towards claim period.	

SECTION VIII

GRAND SUMMARY OF THE QUOTED PRICE

Sr. Nos.	SCHEME DESCRIPTION	Total price for supply F.O.R site inclusive all duties taxes	Total for Erection, Testing & Commissioning inclusive all Taxes(INR)	Grand Total(INR)
1	Scheme No: ES23SH1021 for Shifting of 66 kV D/C O/H line to U/G (4 Nos. of 3C X 300 Sq mm cables) from Down town Dist to 66kV Palam Grid for the circuits 220 kV Mehraulli to 66kV Palam and 66kV Palam to Bijwasan due to Development of commercial land by DIAL.			
TOTAL Package Cost				
In words :				

We declare that the following are our quoted prices in INR for the entire project/schemes.

Date: Bidder Name:

Place: Bidders Address:

Name & Signature ……..

Designation: ……

Common Seal:……..

APPENDIX IV

BID FORM

To,

Head of Department,
Contracts & Material Department,
BSES RAJDHANI Power Ltd
Ist Floor, C Block
BSES Bhawan, Nehru Place
New Delhi 110019.

Dear Sir,

1 We understand that BRPL is desirous of awarding the contract for……. (Name of the Work) work in its licensed distribution network area in Delhi.

2 Having examined the Tender Documents for the above named works, we the undersigned, offer to deliver the goods/services in full conformity with the Terms and Conditions, technical specifications & Scope of Work as may be determined in accordance with the terms and conditions of the contract. The quoted amounts for this work are in accordance with the Price Schedules attached herewith and are made part of this bid.

3 If our Bid is accepted, we undertake to deliver the entire goods/services as per delivery/ completion schedule mentioned in Section III from the date of award of order/letter of intent.

4 If our Bid is accepted, we will furnish a Contract Cum Performance Bank Guarantee (CPBG) for due performance of the Contract in accordance with the Terms and Conditions of the NIT.

5 We agree to abide by this Bid for a period of 180 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.

6 We declare that we are aware of the provision of all Laws associated with the supply of equipment's/materials or Services and the prices have been quoted accordingly.

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

8 We understand that BRPL is not bound to accept the lowest, or any bid BRPL may receive.

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

10 We do hereby agree and shall abide the terms of tender documents/agreement, in full

Dated this..... day of..... 2024

Signature..... In the capacity of ……

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

(IN BLOCK CAPITALS).....

Appendix V

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed & stamped by the bidder along-with bid)

BRPL 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 commercially 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. BRPL 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. BRPL will make every effort to make the bid process transparent. However, the award decision by BRPL would be final and binding on the supplier/Contractor.

3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of BRPL, 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 BRPL.

6. In case of intranet medium, BRPL shall provide the infrastructure to bidders, further, BRPL 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 BRPL.

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 BRPL 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 BRPL.

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.

For……

Signature:

Name:

Designation:

APPENDIX VI

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 supply/services of [name and/or description of the goods/services] (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 RAJDHANI Power Ltd., with its Corporate Office at BSES Bhawan, Nehru Place, New Delhi - 110019 ,(herein after called —the "Purchaser")in the sum of …… (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_____ 2024. 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 180 days after the due date of submission bid, and any demand in respect thereof should reach the Bank not later than the above date.

(Stamp & signature of the bank)

Signature of the witness(s)

APPENDIX - VII

LITIGATION HISTORY

Year	Name of client	Details of contract & date	Cause of Litigation/ arbitration and dispute	Disputed amount

APPENDIX - VIII

CURRENT CONTRACT COMMITMENTS/ WORK IN PROGRESS

Year	Name of client	Details of contract & date	Value of outstanding work	Estimated completion date

APPENDIX - IX

FINANCIAL DATA

(Duly Certified by Chartered Accountant)

	FY 23-24	FY 22-23	FY 21-22
Total assets			
Current assets			
Total Liability			
Current Liability			
Profit before taxes			
Profit after taxes			
Sales Turnover			

APPENDIX X

CHECK LIST

Sl No	Description	Compliance
1	INDEX	YES/NO
2	COVERING LETTER	YES/NO
3	BID FORM (UNPRICED) DULY SIGNED	YES/NO
4	BILL OF MATERIAL (UNPRICED)	YES/NO
5	DOCUMENTS IN SUPPORT OF QUALIFICATION CRITERIA	YES/NO
6	TECHNICAL BID	YES/NO
7	ACCEPTANCE TO COMMERCIAL TERMS AND CONDITIONS	YES/NO
8	FINANCIAL BID (IN SEALED ENVELOPE)	YES/NO
9	EMD IN PRESCRIBED FORMAT	YES/NO
10	DEMAND DRAFT OF RS 1000/- DRAWN IN FAVOUR OF BSES RAJDHANI POWER LTD	YES/NO
11	POWER OF ATTORNEY/AUTHORISATION LETTER FOR SIGNING THE BID	YES/NO
12	FINANCIAL DATA IN TABULAR FORMAT	YES/NO
13	LIST OF CURRENT COMMITMENTS/ WORK IN PROGRESS	YES/NO
14	BANK SOLVENCY CERTIFICATE	YES/NO
15	NO LITIGATION CERTIFICATE	YES/NO

APPENDIX-XI
PROFORMA OF CONTRACT CUM PERFORMANCE BANK GUARANTEE

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

This Guarantee made at _____ this [__] day of [____] 2024

1. WHEREAS **M/s BSES Rajdhani Power Limited**, a Company incorporated under the provisions of Companies Act, 1956 having its Registered Office at **BSES Bhawan, Nehru Place, New Delhi - 110019**, India hereinafter referred to as the "Company", (which expression shall unless repugnant to the context or meaning thereof include its successors, administrators, executors and assigns).

2. AND WHEREAS the Company has entered into a contract for _____ (Please specify the nature of contract here) vide Contract No. _____dated _____ (hereinafter referred to as the "Contract") with M/s._____, (hereinafter referred to as "Contractor", which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include each of their respective successors and assigns) for providing services on the terms and conditions as more particularly detailed therein.

3. AND WHEREAS as per clause ___of General Conditions of Contract, the Contractor is obliged to provide to the Company an unconditional bank guarantee for an amount equivalent to ten percent (10%) of the total Contract Value for the timely completion and faithful and successful execution of the Contract from [_____] pl. specify the name of Bank) having its head/registered office at [_____] through its branch in _____(pl. specify the name of Branch through which B.G is issued) hereinafter referred to as "the Bank", (which expression shall unless it be repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns).

4. NOW THEREFORE, in consideration inter alia of the Company granting the Contractor the Contract, the Bank hereby unconditionally and irrevocably guarantees and undertakes, on a written demand, to immediately pay to the Company any amount so demanded (by way of one or more claims) not exceeding in the aggregate [Rs.]……(in words) without any demur, reservation, contest or protest and/or without reference to the Contractor and without the Company needing to provide or show to the Bank ,grounds or reasons or give any justification for such demand for the sum/s demanded.

5. The decision of the Company to invoke this Guarantee and as to whether the Contractor has not performed its obligations under the Contract shall be binding on the Bank. The Bank acknowledges that any such demand by the Company of the amounts payable by the Bank to the Company shall be final, binding and conclusive evidence in respect of the amounts payable by the Supplier to the Owner. Any such demand made by the Owner on the Bank shall be conclusive and binding, notwithstanding any difference between the Owner and the Contractor or any dispute raised, invoked, threatened or pending before any court, tribunal, arbitrator or any other authority.

6. The Bank also agrees that the Company at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor without proceeding against the Contractor notwithstanding any other security or other guarantee that the Companymay have in relation to the Contractor's liabilities.

7. The Bank hereby waives the necessity for the Company first demanding the aforesaid amounts or any part thereof from the Contractor before making payment to the Company and further also waives any right the Bank may have of first requiring the Company to use its legal remedies against the Contractor, before presenting any written demand to the Bank for payment under this Guarantee.

8. The Bank's obligations under this Guarantee shall not be reduced by reason of any partial performance of the Contract. The Bank's obligations shall not be reduced by any failure by the Company to timely pay or perform any of its obligations under the Contract.

9. The Bank further unconditionally and unequivocally agrees with the Company that the Company shall be at liberty, without the Bank's consent and without affecting in any manner its rights and the Bank's obligation under this Guarantee, from time to time, to:

(i) Vary and/or modify any of the terms and conditions of the Contract;

(ii) Forebear or enforce any of the rights exercisable by the Company against the Contractor under the terms and conditions of the Contract; or

(iii) Extend and/or postpone the time for performance of the obligations of the Contractor under the Contract;

and the Bank shall not be relieved from its liability by reason of any such act or omission on the part of the Company or any indulgence shown by the Company to the Contractor or any other reason whatsoever which under the law relating to sureties would, but for this provision, have the effect of relieving the Bank of its obligations under this Guarantee.

10. This Guarantee shall be a continuing bank guarantee and shall not be discharged by any change in the constitution or composition of the Contractor, and this Guarantee shall not be affected or discharged by the liquidation, winding-up, bankruptcy, reorganization, dissolution or insolvency of the Contractor or any of them or any other circumstances whatsoever.

11. This Guarantee shall be in addition to and not in substitution or in derogation of any other security held by the Company to secure the performance of the obligations of the Contractor under the Contract.

12. NOTWITHSTANDING anything herein above contained, the liability of the BANK under this Guarantee shall be restricted to _____ (insert an amount equal to ten percent (10%) of the Contract Value) and this Guarantee shall be valid and enforceable and expire on _____ (pl. specify date) or unless a suit or action to enforce a claim under this Guarantee is filed against the Bank on or before the date of expiry.

13. On termination of this Guarantee, all rights under the said Guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities hereunder.

14. The Bank undertakes not to revoke this Guarantee during its validity except with the prior written consent of the Company and agrees that any change in the constitution of the Bank or the Contractor shall not discharge our liability hereunder.

15. Company may assign this Guarantee to any Person or body whether natural, incorporated or otherwise under intimation to the Bank. The Bank shall be discharged of its obligations hereunder by performance in accordance with the terms hereof to such assignee without verifying the validity / legality / enforceability of the assignment.

16. This Guarantee shall be governed by the laws of India. Any suit, action, or other proceeding arising out of, connected with, or related to this Guarantee or the subject matter hereof shall be subject to the exclusive jurisdiction of the courts of Delhi, India.
Dated this ……. day of …….. …2024 at ……..

(Signature)
.....

(Name)
.....

(Designation with Bank Stamp)

Attorney as per

Power of Attorney No.....

Date.....

Beneficiary's bank detail with IFSC Code:

Beneficiary Name	: BSES Rajdhani Power Limited
Bank Name	: State Bank of India
A/c No.	: 40214783615
IFSC Code	: SBIN0009601

Vendor has to fill this form & submit along with the PERFORMANCE BANK GUARANTEE

1. Bank Email ID----------Bank Phone No----------

2. Where to Dispatched the BG -Local Address of bank ----------

3. Where to Dispatched the BG Head Office Address ----------

SECTION IX

VENDOR CODE OF CONDUCT

Bidder shall agree to comply with Vendor code of Conduct as mentioned in BRPL Website. Purchaser is committed to conducting its business in an ethical, legal and socially responsible manner. To encourage compliance with all legal requirements and ethical business practices, Purchaser has established this Vendor Code of Conduct (the "Code") for Purchaser's Vendors. For the purposes of this document, "Vendor" means any company, corporation or other entity that sells, or seeks to sell goods or services, to Purchaser, including the Vendor's employees, agents and other representatives. Fundamental to adopting the Code is the understanding that a business, in all of its activities, must operate in full compliance with the laws, rules and regulations of the countries in which it operates. This Code encourages Vendors to go beyond legal compliance, drawing upon internationally recognized standards, in order to advance social and environmental responsibility.

I. Labour and Human Rights

Vendors must uphold the human rights of workers, and treat them with dignity and respect as understood by the international community.

- Fair Treatment - Vendors must be committed to a workplace free of harassment. Vendors shall not threaten workers with or subject them to harsh or inhumane treatment, including sexual harassment, sexual abuse, corporal punishment, mental coercion, physical coercion, verbal abuse or unreasonable restrictions on entering or exiting company provided facilities.
- Antidiscrimination - Vendors shall not discriminate against any worker based on race, colour, age, gender, sexual orientation, ethnicity, disability, religion, political affiliation, union membership, national origin, or marital status in hiring and employment practices such as applications for employment, promotions, rewards, access to training, job assignments, wages, benefits, discipline, and termination. Vendors shall not require a pregnancy test or discriminate against pregnant workers except where required by applicable laws or regulations or prudent for workplace safety. In addition, Vendors shall not require workers or potential workers to undergo medical tests that could be used in a discriminatory way except where required by applicable law or regulation or prudent for workplace safety.
- Freely Chosen Employment - Forced, bonded or indentured labour or involuntary prison labour is not to be used. All work will be voluntary, and workers should be free to leave upon reasonable notice. Workers shall not be required to hand over government-issued identification, passports or work permits as a condition of employment.
- Prevention of Under Age Labour - Child labour is strictly prohibited. Vendors shall not employ children. The minimum age for employment or work shall be 15 years of age, the minimum age for employment in that country, or the age for completing compulsory education in that

country, whichever is higher. This Code does not prohibit participation in legitimate workplace apprenticeship programs that are consistent with Article 6 of ILO Minimum Age Convention No. 138 or light work consistent with Article 7 of ILO Minimum Age Convention No. 138.

- Juvenile Labour - Vendors may employ juveniles who are older than the applicable legal minimum age for employment but are younger than 18 years of age, provided they do not perform work likely to jeopardize their heath, safety, or morals, consistent with ILO Minimum Age Convention No. 138.
- Minimum Wages - Compensation paid to workers shall comply with all applicable wage laws, including those relating to minimum wages, overtime hours and legally mandated benefits. Any disciplinary wage deductions are to conform to local law. The basis on which workers are being paid is to be clearly conveyed to them in a timely manner.
- Working Hours - Studies of good manufacturing practices clearly link worker strain to reduced productivity, increased turnover and increased injury and illness. Work weeks are not to exceed the maximum set by local law. Further, a work week should not be more than 60 hours per week, including overtime, except in emergency or unusual situations. Workers should be allowed at least one day off per seven-day week.
- Freedom of Association - Open communication and direct engagement between workers and management are the most effective ways to resolve workplace and compensation issues. Vendors are to respect the rights of workers to associate freely and to communicate openly with management regarding working conditions without fear of reprisal, intimidation or harassment. Workers' rights to join labour unions, seek representation and or join worker's councils in accordance with local laws should be acknowledged.

II. Health and Safety Vendors must recognize that in addition to minimizing the incidence of work-related injury and illness, a safe and healthy work environment enhances the quality of products and services, consistency of production and worker retention and morale. Vendors must also recognize that ongoing worker input and education is essential to identifying and solving health and safety issues in the workplace.

The health and safety standards are:

- Occupational Injury and Illness - Procedures and systems are to be in place to prevent, manage, track and report occupational injury and illness, including provisions to: a) encourage worker reporting; b) classify and record injury and illness cases; c) provide necessary medical treatment; d) investigate cases and implement corrective actions to eliminate their causes; and e) facilitate return of workers to work.

- Emergency Preparedness - Emergency situations and events are to be identified and assessed, and• their impact minimized by implementing emergency plans and response procedures, including: emergency reporting, employee notification and evacuation procedures, worker training and drills, appropriate fire detection and suppression equipment, adequate exit facilities and recovery plans.
- Occupational Safety - Worker exposure to potential safety hazards (e.g., electrical and other energy sources, fire, vehicles, and fall hazards) are to be controlled through proper design, engineering and administrative controls, preventative maintenance and safe work procedures (including lockout/tagout), and ongoing safety training. Where hazards cannot be adequately controlled by these means, workers are to be provided with appropriate, well-maintained, personal protective equipment. Workers shall not be disciplined for raising safety concerns.
- Machine Safeguarding - Production and other machinery is to be evaluated for safety hazards. Physical guards, interlocks and barriers are to be provided and properly maintained where machinery presents an injury hazard to workers.
- Industrial Hygiene - Worker exposure to chemical, biological and physical agents is to be identified, evaluated, and controlled. Engineering or administrative controls must be used to control overexposures. When hazards cannot be adequately controlled by such means, worker health is to be protected by appropriate personal protective equipment programs.
- Sanitation, Food, and Housing - Workers are to be provided with ready access to clean toilet facilities, potable water and sanitary food preparation, storage, and eating facilities. Worker dormitories provided by the Participant or a labour agent are to be maintained clean and safe, and provided with appropriate emergency egress, hot water for bathing and showering, and adequate heat and ventilation and reasonable personal space along with reasonable entry and exit privileges.
- Physically Demanding Work - Worker exposure to the hazards of physically demanding tasks,• including manual material handling and heavy or repetitive lifting, prolonged standing and highly repetitive or forceful assembly tasks is to be identified, evaluated and controlled.

III. Environmental

Vendors should recognize that environmental responsibility is integral to producing world class products. In manufacturing operations, adverse effects on the environment and natural resources are to be minimized while safeguarding the health and safety of the public.

The environmental standards are:

- Product Content Restrictions - Vendors are to adhere to applicable laws and regulations regarding prohibition or restriction of specific substances including labeling laws and

regulations for recycling and disposal. In addition, Vendors are to adhere to all environmental requirements specified by Purchaser.

- Chemical and Hazardous Materials -Chemical and other materials posing a hazard if released to the environment are to be identified and managed to ensure their safe handling, movement, storage, recycling or reuse and disposal.
- Air Emissions - Air emissions of volatile organic chemicals, aerosols, corrosives, particulates, ozone depleting chemicals and combustion by-products generated from operations are to be characterized, monitored, controlled and treated as required prior to discharge.
- Pollution Prevention and Resource Reduction -Waste of all types, including water and energy, are to be reduced or eliminated at the source or by practices such as modifying production, maintenance and facility processes, materials substitution, conservation, recycling and re-using materials.
- Wastewater and Solid Waste - Wastewater and solid waste generated from operations, industrial processes and sanitation facilities are to be monitored, controlled and treated as required prior to discharge or disposal.
- Environmental Permits and Reporting - All required environmental permits (e.g. discharge• monitoring) and registrations are to be obtained, maintained and kept current and their operational and reporting requirements are to be followed.

IV. Ethics

Vendors must be committed to the highest standards of ethical conduct when dealing with workers, Vendors, and customers.

- Corruption, Extortion, or Embezzlement - Corruption, extortion, and embezzlement, in any form, are strictly prohibited. Vendors shall not engage in corruption, extortion or embezzlement in any form and violations of this prohibition may result in immediate termination as an Vendor and in legal action.
- Disclosure of Information - Vendors must disclose information regarding its business activities, structure, financial situation, and performance in accordance with applicable laws and regulations and prevailing industry practices.
- No Improper Advantage - Vendors shall not offer or accept bribes or other means of obtaining undue or improper advantage.
- Fair Business, Advertising, and Competition - Vendors must uphold fair business standards in• advertising, sales, and competition.
- Business Integrity - The highest standards of integrity are to be expected in all business interactions. Participants shall prohibit any and all forms of corruption, extortion and

embezzlement. Monitoring and enforcement procedures shall be implemented to ensure conformance.

- Community Engagement - Vendors are encouraged to engage the community to help foster social and economic development and to contribute to the sustainability of the communities in which they operate.
- Protection of Intellectual Property - Vendors must respect intellectual property rights; safeguard customer information; and transfer of technology and know-how must be done in a manner that protects intellectual property rights.

V. Management System

Vendors shall adopt or establish a management system whose scope is related to the content of this Code. The management system shall be designed to ensure (a) compliance with applicable laws, regulations and customer requirements related to the Vendors' operations and products; (b) conformance with this Code; and (c) identification and mitigation of operational risks related to this Code. It should also facilitate continual improvement.

The management system should contain the following elements:

- Company Commitment - Corporate social and environmental responsibility statements affirming Vendor's commitment to compliance and continual improvement.
- Management Accountability and Responsibility - Clearly identified company representative[s] responsible for ensuring implementation and periodic review of the status of the management systems.
- Legal and Customer Requirements - Identification, monitoring and understanding of applicable laws, regulations and customer requirements.
- Risk Assessment and Risk Management - Process to identify the environmental, health and safety and labour practice risks associated with Vendor's operations. Determination of the relative significance for each risk and implementation of appropriate procedural and physical controls to ensure regulatory compliance to control the identified risks.
- Performance Objectives with Implementation Plan and Measures - Areas to be included in a risk assessment for health and safety are warehouse and storage facilities, plant/facilities support equipment, laboratories and test areas, sanitation facilities (bathrooms), kitchen/cafeteria and worker housing /dormitories. Written standards, performance objectives, targets and implementation plans including a periodic assessment of Vendor's performance against those objectives.
- Training - Programs for training managers and workers to implement Vendor's policies, procedures and improvement objectives.

- Communication - Process for communicating clear and accurate information about Vendor's performance, practices and expectations to workers, Vendors and customers.
- Worker Feedback and Participation - Ongoing processes to assess employees' understanding of• and obtain feedback on practices and conditions covered by this Code and to foster continuous improvement.
- Audits and Assessments - Periodic self-evaluations to ensure conformity to legal and regulatory• requirements, the content of the Code and customer contractual requirements related to social and environmental responsibility.
- Corrective Action Process - Process for timely correction of deficiencies identified by internal or• external assessments, inspections, investigations and reviews.
- Documentation and Records - Creation of documents and records to ensure regulatory compliance• and conformity to company requirements along with appropriate confidentiality to protect privacy.

The Code is modelled on and contains language from the Recognized standards such as International Labour Organization Standards (ILO), Universal Declaration of Human Rights (UDHR), United Nations Convention against Corruption, and the Ethical Trading Initiative (ETI) were used as references in preparing this Code and may be useful sources of additional information.

ANNEXURE-I

TECHNICAL SPECIFICATIONS

BSES

TECHNICAL SPECIFICATION

FOR

LAYING OF 66 kV / 33 kV / 11 kV / 1.1 KV GRADE PVC / XLPE CABLES

Specification no: GN101-03-SP-06-03

BSES RAJDHANI POWER LTD			
Prepared by	Pronab Bairagi		Rev : 03
Reviewed by	Amit Tomar	31.10.17	Date : 31.10.2017
Approved by	Vijay Panpalia		Pages : 44
Registered Office: BSES Bhavan, Nehru Place, Delhi - 110019			

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General Specification

1.0 Codes & standards

Materials, equipment and methods used in the Laying of 11/33/66KV Cable shall conform to the latest edition of following –

S. No.	Reference No.	Name of Standard
1		Indian Electricity Rules, 1956
2		Indian Electricity Act, 1910
3		Indian Electricity Supply Act, 1948
4		Electricity Laws Act, 1991
5		National Electrical Code (Indian standards Institution)
6	IS 1255	Code of practice for installation and maintenance of Power Cable upto and Including 33KV rating.
7	IS 1554	PVC Insulated Electrical Cables upto 11KV
8	IS 2274	Code of Practice for electrical wiring installation – system voltage exceeding 650V
9	IS 7098 Part II	Crosslinked Polyethylene Insulated PVC sheathed cables for working voltages from 3.3KV upto and including 33KV
10	IS 7098 Part III	Crosslinked Polyethylene Insulated PVC sheathed cables for working voltages from 66KV upto and including 220KV
11	IS 5820	Specification of precast concrete Cable cover.

2.0 Design guidelines and Parameter for cable laying-

S. No.	Parameter	Details
2.1	Selection of Cable 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: -The side of road which presents the least obstacles and the fewest roadways crossings. -The future consumers and existing cables in the route may influence the cable route. -Railway, road crossings, MCD and other government agencies may also influence in selection of cable route. -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.
2.2	Site Preparation	a) Barricading: • The identified cable route shall be barricaded continually before excavation. • Barricading shall be as drawing laid • Open Trench method shall be adopted as far as possible for trench preparation. b) Excavated Earth:

		• The excavated earth shall be so stored at site, that it shall not cause trouble to running traffic • All excavated earth shall be stored within the barricaded area. • c) Full height fence, barriers, barricades etc. shall be erected around the site in order to prevent the working area from the risk of accidents due to speedy vehicular movement. Same the way barricades protect the road users from the danger due to construction equipment and temporary structures. d) The structure dimensions of the barricades , material and composition, its colour scheme, BSES logo and details shall be in accordance with specification and drawing laid down in the tender documents. e) All the barricades shall be erected as per the design requirements of employer, numbered painted and maintained in good condition and also barricade in charge maintain a barricade register at site. f) All barricades shall be conspicuously seen in the dark/night time by the road users so that no vehicle hits the barricades. Conspicuity shall be ensured by affixing retro reflective strips of required size and shape at appropriate angle at bottom and middle portion of the barricades at a minimum gap of 1000 mm. In addition minimum one red light /red blinker and red beacon light should be placed at the top of each barricade. g) PPP to be provided by vendor to all workers and engineers. **h) Also refer Annexure- 7: Barricading and Safety**
2.3	Clearance	The desired minimum clearances are as follows – - Power cable to power cable – A minimum clearance equal to diameter shall be maintained. Trench drawings shall be referred to for guidance. - Power Cable to control cables – 0.2 M - Power cable to communication cable – 0.3M - Power cable to gas/water main – 0.3 M
2.4	Depth of Cable Laying	The desired minimum depth of laying from ground surface to the top of cable shall be: 650 / 1100V grade XLPE Cables – 75 cm 6.35 / 11KV grade XLPE Cables – 90 cm Low voltage and Control cable - 75 cm 19 / 33KV grade XLPE Cables - 1.2 M 38 / 66KV grade XLPE Cables - 1.5 M Cables at Road crossing - 1.0 M (min.) Cables at railways level crossings (measured from bottom of sleepers to the top of Pipe) - 1.0 M (min.) 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.
2.5	Width of Cable	The width and depth of Cable Trenches shall depend upon number of

	trenches	circuits and Voltage Grade. Annexure # 3 and drawings of this specification shall be followed.
2.6	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 – A) Single Core Cables (PVC & XLPE) Upto 1.1KV grade – 15 X D Above 11KV grade - 20 X D B) Multi Core Cables (PVC & XLPE) Upto 1.1KV grade - 12 X D Above 1.1KV grade – 15 X D Where 'D' is overall diameter of the cable.
2.7	Maximum permissible Tensile Strength for Cables	For cables pulled with Stocking PVC and XLPE SWA Armoured cables P = 30 X D PVC and XLPE AWA Armoured cables P = 20 X D Where P= pulling force in Kgrm, D= Diameter of Cable in mm For Cables pulled by Cable eyes Aluminium conductor – 30 N/mm2 = 3 Kg/sq. mm Copper conductors - 50N/mm2 = 5 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.
2.8	Methods of Laying	a) 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 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. b) HDPE (PN6,PE80) 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 upto 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. c) 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. d) 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. e) 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. f) 75 mm of the sand bed shall be placed at the bottom of cable trench. g) 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. h) 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). i) The type of the covers shall be as under - 1.1KV Cables – Single layer of brick thickness not less than 75 mm (3 inch) - 11KV Cables – sand stone of thickness not less than 75mm (3 inch). - 33KV Cables shall be protected by reinforced concrete cover of width 300 mm as per attached drawing with thickness not less than 50mm. - 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 "BSES EHV CABLE". j) 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. k) The trench shall be filled-up by loose soft soil (300mm) and Excavated soil as indicated in drawings.
2.9	Cable over	On Bridges the cables are generally supported on wooden cleats and

	Bridges	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.
2.10	Laying of Single Core Cables	a) The single core cables shall be laid in trefoil formation. Single core cables can be laid individually in HDPE pipe in case of HDD only. (Details of HDPE Pipe as per Annexure-9) 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 in trefoil format shall be maintained by vendor (for double circuit) 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 aluminium 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.
2.11	Earthing of Single Core Cables	a) 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. b) For feeder length more than 2 KM, mid point earthing shall be provided.
2.12	Violation of barricading guideline and safety norms	On violation of barricading guideline and safety norms, a fine of Rs.5000 /day shall be imposed. BRPL inspector/engineer in-charge shall be empowered to impose the above penalty.

3.0 General guidelines for Laying Cables

S. No.	Parameter	Details
3.1	General	a) 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. b) 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 c) 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, these drawings shall be approved by BSES, prior to commencement of work. d) BSES 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. All civil works, structural work, clamping and earthing shall be carried out by the contractor, so that the cables and accessories perform satisfactorily during the entire life time. e) 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.
3.2	Handling and Storage of Cable drums (All empty drums are returnable)	a) 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. b) 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. c) 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. d) After cable laying, empty cable drums shall be taken return back by vendor from site at their own risk and cost. Cost of empty drums shall be deducted from vendor account during final settlement.
3.3	Cable Laying	a) The ground over which the drum is positioned at site should be

		properly consolidated and jacks placed on both sizes 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. b) The cable should always be paved 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. c) 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. d) The pulling method to be used shall be approved by BSES. Cable supplier's recommended maximum pulling tension shall not be exceeded. e) 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 side wall friction. The contractor shall ensure that PVC/HDPE sheath of cable is free from damage due to abrasion. f) 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. g) 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.
3.4	Excavation of the Trenches	a) The excavation of the trenches shall be commenced, with proper co-ordination with BSES, so that all the necessary clearances for the route are already obtained from the competent authorities, well in time. b) 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. c) 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. d) 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. e) 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, the Contractor will arrange and pay for any necessary repair, to make good the damages. f) 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. g) 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. h) 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.
3.5	Excavated material	a) 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. b) Where, owing to traffic or for reasons of safety or other considerations, this is not permissible, the excavated material shall be removed from 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.
3.6	Pipes and Ducts	a) 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. b) 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) c) 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). d) 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. e) 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.

		f) 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. g) 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.
3.7	Joint Bays	The contractor shall provide all help so as to enable jointers to carry out their work efficiently and expeditiously. The method of securing and supporting cable joints and cables also the bonding and earthing thereof, shall be detailed on the drawing. The details shall be approved by BSES prior to commencement or work. The joint position should be staggered.
3.8	Back filling of trenches	a) Filling in of trenches shall not be commenced until BSES has inspected and approved the cables and accessories at site. The inspection should be got done on daily basis so that the trenches do not remain open unnecessarily, to avoid inconvenience to public. b) The trench shall be backfilled after putting all protections for cables. c) Soft soil shall be backfilled for 300 mm above the cable protection cover. d) Caution Tape shall be laid all along the cable route above the soft soil filling. e) Complete backfilling shall be done above the caution tape.
3.9	temporary Reinstatement	a) 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. b) 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. c) 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.
3.10	Permanent Reinstatement of Public Road,	a) 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. b) 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.

3.11	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.
3.12	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.
3.13	Cable supports / Clamps	a) 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 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 b) Every cable shall be supported at a point not more than 500 mm from its termination.
3.14	Installation of Cables in tunnels / basement / below the panels etc	a) 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 cables and shall incorporate an interlocking feature so as to prevent movement between supports. b) 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. c) 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. d) 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.

3.15	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 cables. Isolators and Lightning arrestor if required to be installed shall be provided as free issue item to the contractor, however the erection and steel structure required shall be in scope of the contractor.
3.16	Sun Shades	All cables shall be protected from direct solar radiation by ventilated sun shields as approved by BSES.
3.17	Route Plan	a) BSES intents to show all the cable routes, location of joints and other underground obstructions on a GPS map. b) 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 of excavations. These completed records shall be submitted to BSES within 15 days of completion of any particular route/feeder. The final bill shall not be processed by BSES unless this activity has been completed to the entire satisfaction of BSES
3.18	Site Facilities to be maintained by the Contractor	a) The contractor shall arrange for all the tools and tackles required for cable laying as per this specification. BSES shall arrange for all the material and manpower required for jointing and end termination. b) Illumination and Power supply shall be arranged by the contractor so that the work can be carried out round the clock. c) 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 d) The contractor shall make arrangement to provide suitable scaffolding arrangement to carry out the termination work e) 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 f) Also refer Annexure-7: Barricading and Safety.
3.19	Type of Roads and guidelines for road restoration	The typical section of type of Roads (based on width) under PWD and MCD are :- - 20 Feet Wide road - 30 Feet wide road - 40 to 60 Feet Road - Other (which include Kota stone, Agra stone, Cement concrete, interlocking paving tiles, brick road, chequered tiles

		and asphalted road) The drawing are shown in annexure IV The guidelines for road restoration for various type of roads and surfaces are indicated in annexure V as :- - Bituminous road Type I (category I & II) - Bituminous road Type II (category III) - Cement concrete road - Kota/Rajasthan stone Road - Brick Road - Interlocking paving tiles. - Agra stone road - Chequered tiles road - Asphalted road

4.0 Testing

S. No.	Parameter	Details
4.1	Tests to be carried out during and after completion of Cable Laying	Testing of cable before jointing – - Cable shall be tested for Insulation Resistance prior to laying by opening the end and resealing end properly. 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) DC High voltage. For old cables test voltage shall be 1.5 times rated voltage or less depending on age of cable.(refer annexure # 2 for values) 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 aluminium wire armour and the spike with a 500/1000V insulation tester. Measured resistance shall not be less than 2.5M OHM per 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.
4.2	**Statutory**	a) Road cutting permission

	clearance	Road cutting permission shall be taken from competent authority by vendor. How ever official fees shall be paid by BRPL. b) Electrical inspector clearance Electrical Inspector clearance shall be in vendor scope. How ever official fees shall be paid by BRPL.

5.0 Progress Reporting:

S. No.	Parameter	Details
5.1	Detailed Progress report	Progress report to be submitted by Contractor to BSES once in a Week containing i) Excavation status ii) Cable laying status iii) Status of preparedness for Jointing iv) Reason for any delay in total programme v) Details of damage to cable during laying. vi) Progress on final completion / Constraints / Forward path

6.0 Drawing, Data & Manuals:

S. No.	Parameter	Details
6.1	To be submitted After Completion of the Job	As the works is completed the following reports in quadruplicate shall be submitted to BSES for record purpose and shall be incorporated in the 'As constructed Records'. a) Feeder details (sending end, receiving end, SAP number of project etc) - Type of cables, cross section area, rated voltage. Details of construction, cable number & drum number. - Year and month of laying. - Actual total route length, cable length, length between joint to joints or end. - Location of cables and joints in relation to certain fixed reference points, for example buildings, hydrant, boundary stones etc. - Jointing reports detailing the date, weather conditions, jointers and supervising Engineers names, details of type of cable and type of joint or termination, location and joint bay number, ambient temperature. - Results of original electrical measurements and testing on cable installation. - Full written reports will be required of any damage occurring to cable or equipment together with remedial action proposed which will be subject to the approval of BSES.
6.2	Drawing and document sizes	Standard size paper A0, A1, A2, A3, A4

7.0.0 Deviations

Deviations from this Specification shall be stated in writing by the contractor. Written approval shall be obtained from BSES by the contractor. In absence of such a statement, it will be assumed by BSES that the Contractor complies fully with this specification during execution of the job.

Deviation mentioned in any other submitted tender docs like in GTP, QAP, Old PO, old WO, BRPL Standard, vendor standards etc. shall not be considered as a deviation at any stage of contract.

The format for approval of deviation attached in annexure # 1

Annexure # 1 – DEVIATION REPORT FORMAT

S. NO.	Clause No. of Specification	Details about deviation	Reason for deviation	Approved by (Sign & Name)

Annexure # 2 – DC HIGH VOLTAGE TEST

Rated Voltage of cable in KV	Test Voltage Between		Duration in Min.
	Any conductor and metallic sheath / Screen / armour	Conductor to conductor (for unscreened Cables)	
0.65 / 1.1	**3**	**3**	**15 Min**
6.35 / 11	**18**	**30**	
19 / 33	**60**	**----**	
38 / 66	**90**	**----**	

Reference value for DC High voltage Test.

Annexure # 3 – CABLE TRENCH DETAILS

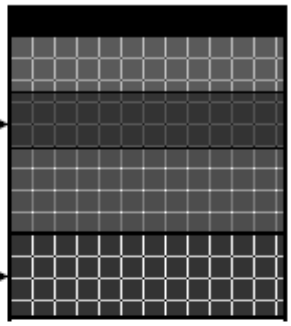
S. No.	Cable Size	Trench		Cable Trench drawing reference
		Width (mm)	**Depth (mm)**	
1	**1.1 kV LT Cables**			
a	3.5Cx150 mm^2 - Single Circuit	**400**	**875**	A – 1 (Drg. # 9)
b	3.5Cx150 mm^2 - Double Circuit	**400**	**875**	A – 1 (Drg. # 9)
c	3.5Cx150 mm^2 - Triple Circuit	**400**	**875**	A – 1 (Drg. # 9)
d	3.5Cx300 mm^2 - Single Circuit	**400**	**875**	A – 1 (Drg. # 8)
e	3.5Cx300 mm^2 - Double Circuit	**400**	**875**	A – 1 (Drg. # 8)
f	3.5Cx300 mm^2 - Triple Circuit	**400**	**875**	A – 1 (Drg. # 8)
2	**11 KV Cables**			
a	3Cx150 / 300 mm^2 - Single Circuit	400	**1055**	A – 2 (Drg. # 6)
b	3Cx150 / 300 mm^2 -Double Circuit	650	**1055**	B – 1 (Drg. # 7)
3	**33 kV Cables**			
a	3Cx400 mm^2 - Single Circuit	**400**	**1235**	A – 3 (Drg. # 3)
b	3Cx400 mm^2 - Double Circuit	**650**	**1235**	B – 2 (Drg. # 4)
c	3Cx400 mm^2 - Quadruple Circuit	**650**	**1235**	B – 2 (Drg. # 5A)
d	3Cx400 mm^2 - Quadruple Circuit	**650**	**1545**	B – 3 (Drg. # 5B)
e	3Cx400 mm^2 - Quadruple Circuit	**1200**	**1235**	C – 1 (Drg. # 5C)
4	**66 kV Cables**			
a	1Cx630/1000 mm^2 - Single Circuit	**650**	**1445**	B – 4 (Drg. # 1)
b	1Cx630/1000 mm^2 - Double circuit	**1200**	**1445**	C – 2 (Drg. # 2)
c	3Cx300 mm^2 - Double circuit	**1200**	**1445**	C – 2 (Drg. # 2A)

Annexure # 4 – Standard Road Profile

STANDARD ROAD PROFILE
20' - 00 " FEET WIDE ROAD (Road type 1)

Sketch 1 of 4

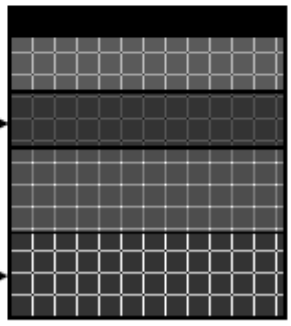
1 **20 mm thick** Pre-Mix Carpet
2 **75 mm thick** WBM 53mm to 22.5 mm stone aggregate
3 **75 mm thick** WBM 63mm to 45 mm stone aggregate
4 **100 mm thick** WBM 90mm to 65 mm stone aggregate
5 Compacted Earth



Sketch 2 of 4

30' - 00 " FEET WIDE ROAD (ROAD TYPE II)

1 **20 mm thick** Pre-Mix Carpet
2 **75 mm thick** WBM 53mm to 22.5 mm stone aggregate
3 **75 mm thick** WBM 63mm to 45 mm stone aggregate
4 **100 mm thick** WBM 90mm to 65 mm stone aggregate
5 Compacted Earth

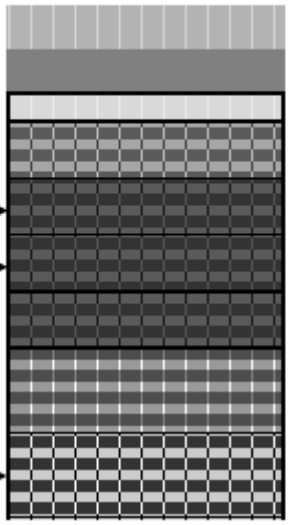


Section X-X '

Sketch 3 of 4

40'-00 " TO 60'-00" FEET WIDE ROAD

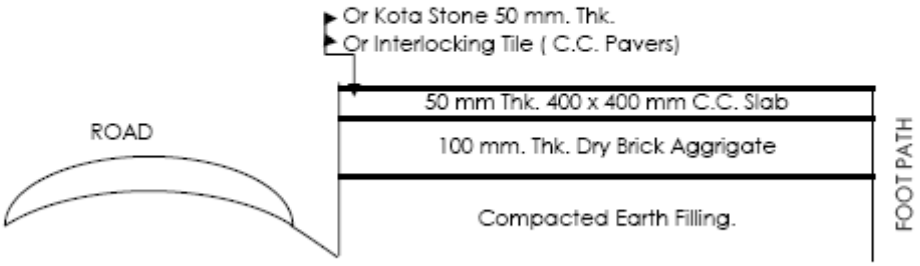
1 **50 mm thk.**(Dense Asphaltic coat) (DAC)
2 **50 mm thk.**(Dense Bituminous)
3 **20 mm thick** Pre-Mix Carpet
4 **75 mm thick** WBM 53mm to 22.5 mm stone aggregate
5 **75 mm thick** WBM 63mm to 45 mm stone aggregate
6 **75 mm thick** WBM 63mm to 45 mm stone aggregate
7 **75 mm thick** WBM 63mm to 45 mm stone aggregate
8 **100 mm thick** WBM 90mm to 65 mm stone aggregate
9 Compacted Earth



Section A-A '

Sketch 4 of 4

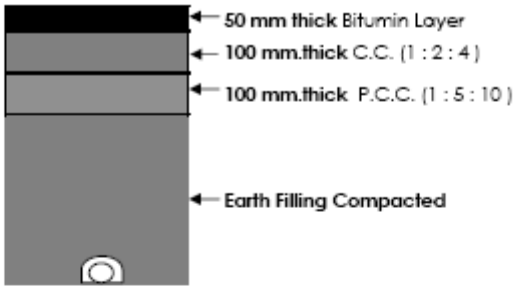
General drawing for cases other than roads.



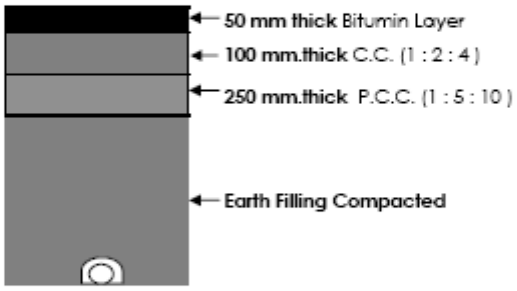
Details of Foot Path Along roads under PWD & MCD.

Annexure # 5 – Road Restoration Sectional Drawing

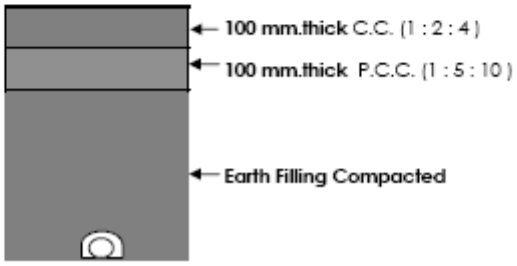
ROAD RESTORATION SECTIONAL DRAWINGS



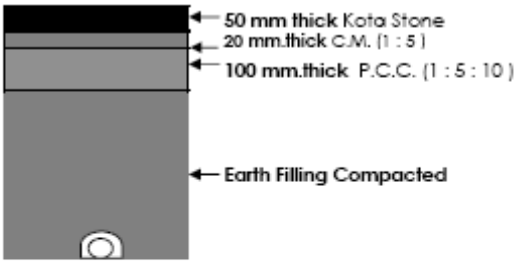
Bituminious Road Type - I (Category 1 & 2) Road width 20 to 30 feet and 30 to 40 feet.



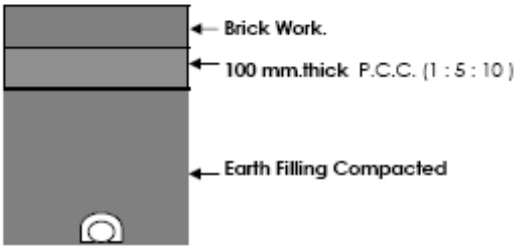
Bituminious Road Type - II (Category 3)



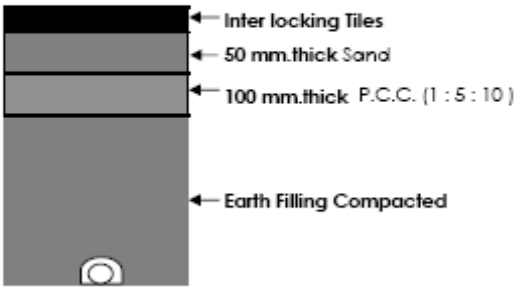
Cement Concrete Road



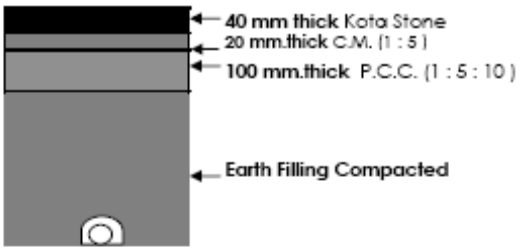
Kota / Rajasthan stone Road



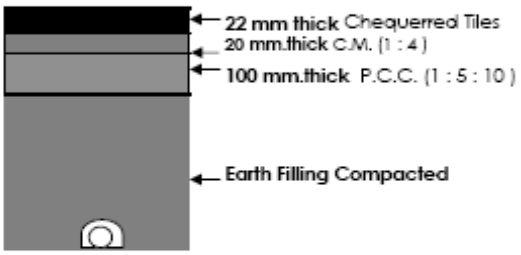
Brick Road



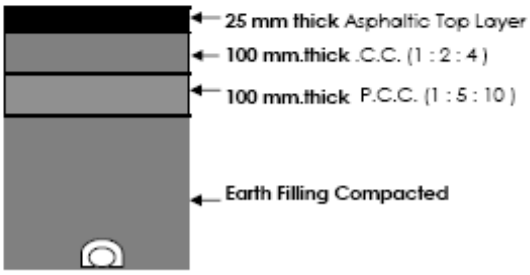
Interlocking Paving Tiles



Agra stone Road .



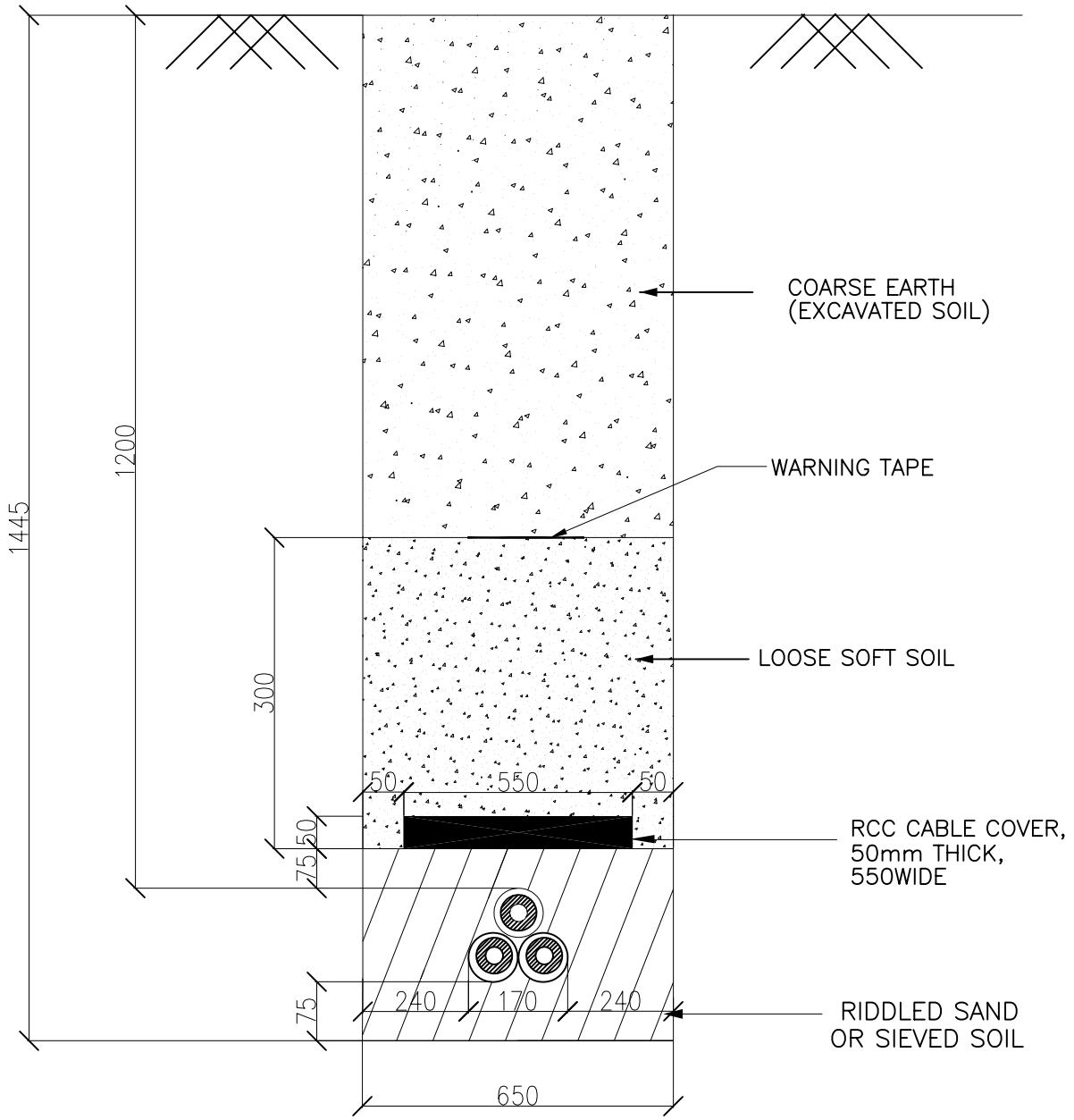
Chequerred Tiles .



Asphaltic Road .

Annexure # 6 – DRAWINGS (CABLE TRENCH AND RCC CABLE COVER)

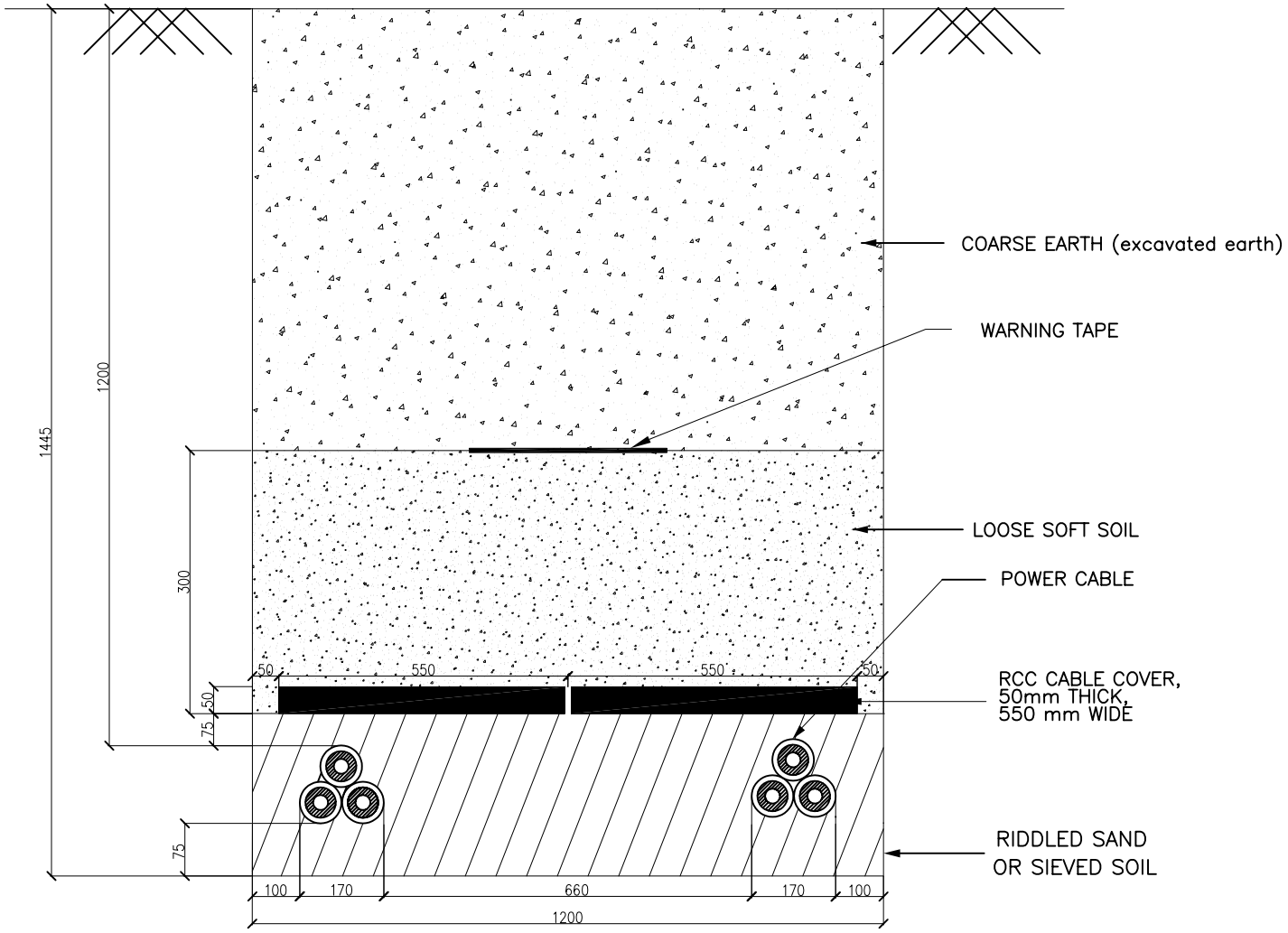
DRAWING # 1



TYPICAL DETAILS FOR 66KV BURRIED CABLE FOR SINGLE CIRCUIT
TYPE – B 4

DRAWN	DS	TITLE:– TRENCH DRAWING FOR 1C X 630 Sq. mm 66KV SINGLE CIRCUIT XLPE CABLE	BSES
CHECKED	SGD		
APPD.	D.GUHA		
DATE			REV. 00
SCALE			

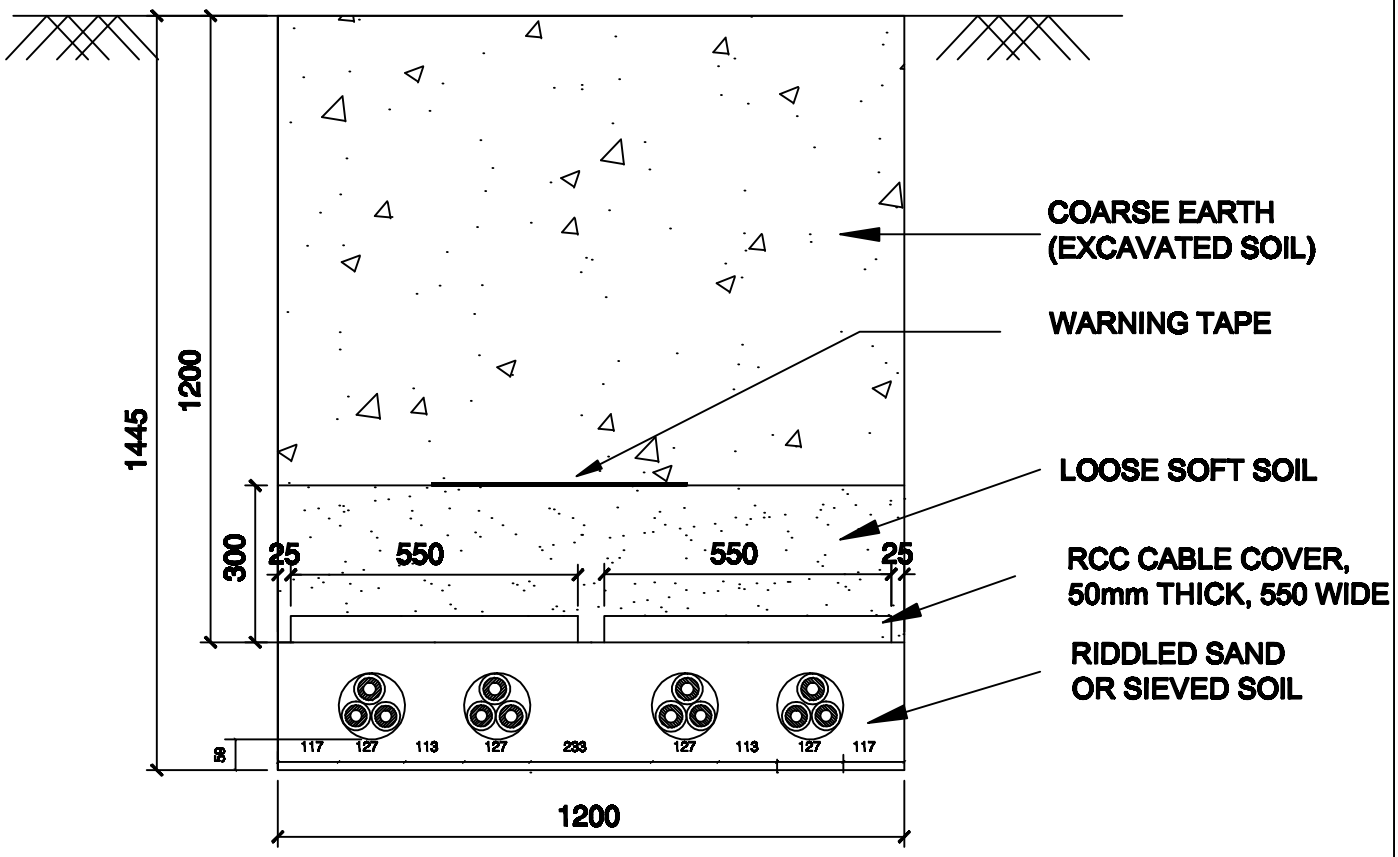
DRAWING # 2



TYPICAL DETAILS FOR 66KV BURRIED CABLE FOR TWO CIRCUIT
TYPE – C 2

DRAWN	DS	TITLE:– TRENCH DRAWING FOR 1C X 630 Sq. mm 66KV DOUBLE CIRCUIT XLPE CABLE	BSES
CHECKED	SGD		
APPD.	D.GUHA		
DATE			REV. 00
SCALE			

DRAWING # 2 A

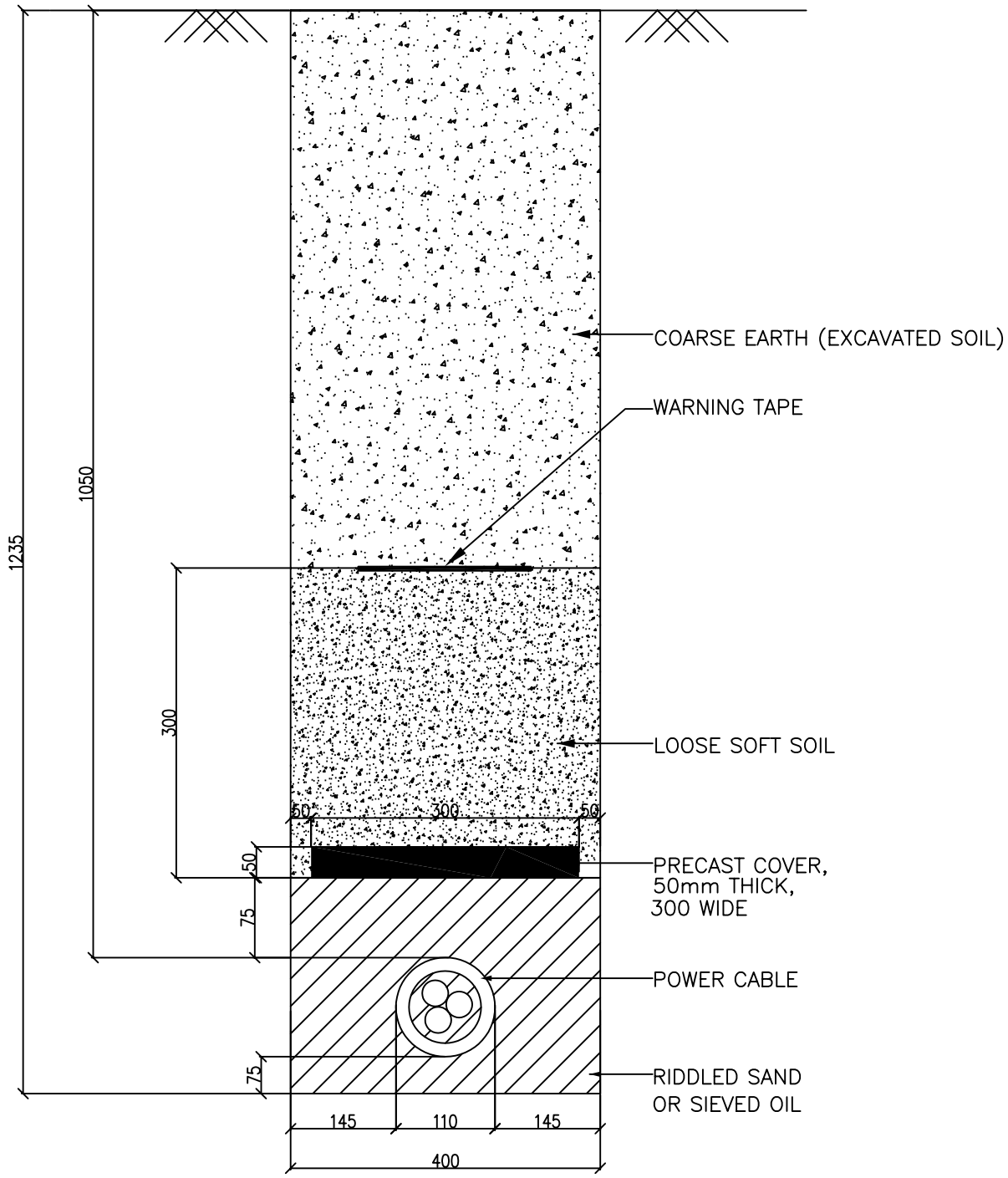


TYPICAL TRENCH SECTION DETAILS FOR 66KV SINGLE CORE 300 Sq. mm. BURRIED CABLE FOR DOUBLE CIRCUIT

TYPE - C 2

DRAWN	SAURABH	TITLE:–	BSES Rajdhani Power Limited
CHECKED	A.S	TYPICAL TRENCH SECTION DETAILS FOR 66KV SINGLE CORE 300 mm BURRIED CABLE FOR DOUBLE CIRCUIT	
APPD.	K.S		
DATE	09.01.15		REV. 00
SCALE			

DRAWING # 3

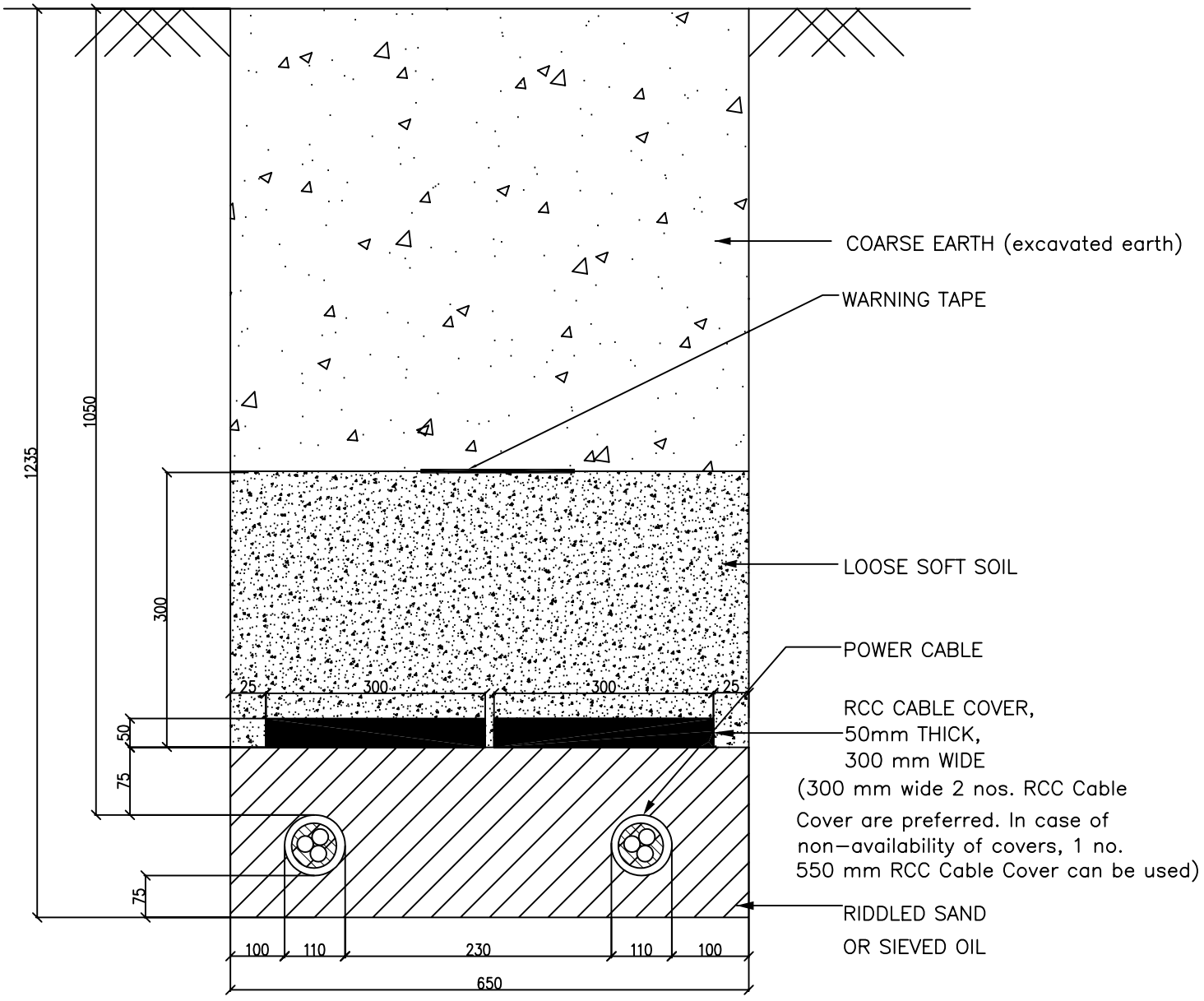


TYPICAL DETAILS FOR 33KV BURRIED CABLE FOR SINGLE CIRCUIT

TYPE – A 3

DRAWN	DS	TITLE:–	BSES
CHECKED	SGD	TRENCH DRAWING FOR	
APPD.	D.GUHA	33KV 3CX 400 mm sq.	
DATE		SINGLE CIRCUIT	REV. 00
SCALE		XLPE CABLE	

DRAWING # 4

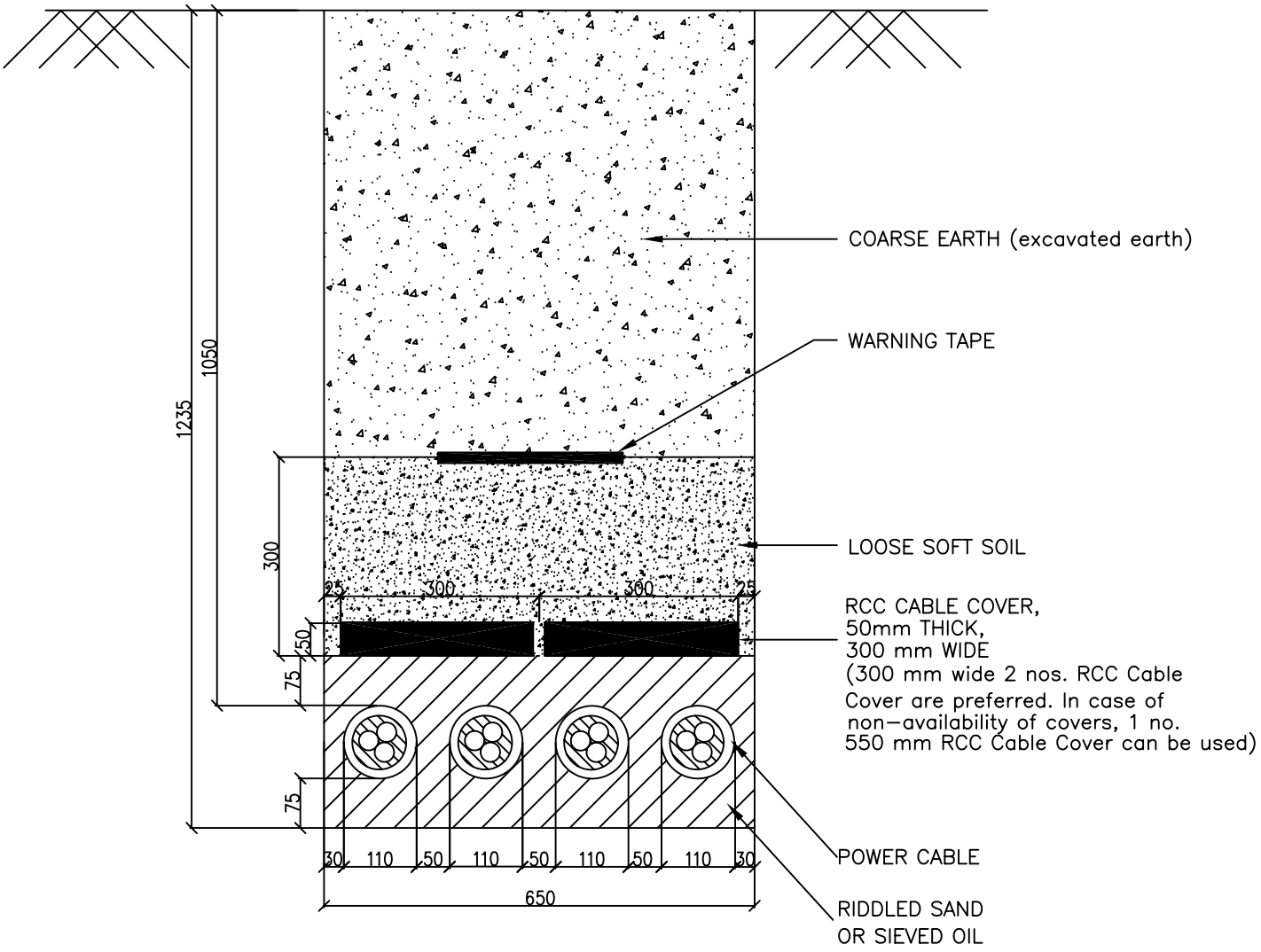


TYPICAL DETAILS FOR 33KV BURRIED CABLE FOR TWO CIRCUIT

TYPE – B–2

DRAWN	DS	TITLE:– TRENCH DRAWING FOR 3C X 400MM2, 33KV DOUBLE CIRCUIT XLPE CABLE	BSES
CHECKED	SGD		
APPD.	D.GUHA		
DATE			REV. 00
SCALE			

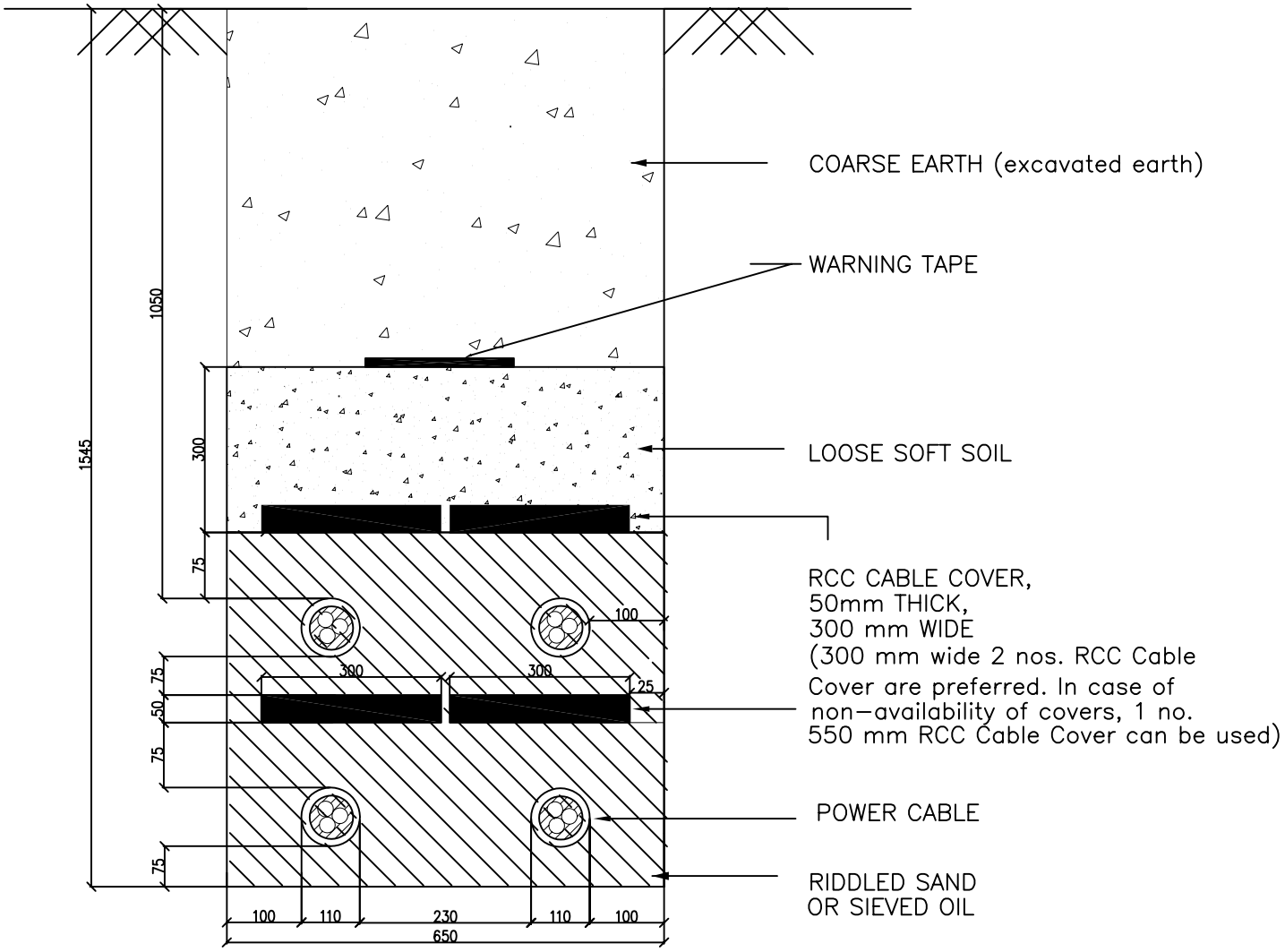
DRAWING # 5 A



TYPICAL DETAILS FOR 33KV BURRIED CABLE FOR FOUR CIRCUIT
TYPE – B 2

DRAWN	DS	TITLE:–	BSES
CHECKED	SGD	TRENCH DRAWING FOR	
APPD.	D.GUHA	3C X 400MM2, 33KV	
DATE		FOUR CIRCUIT	REV. 00
SCALE		XLPE CABLE	

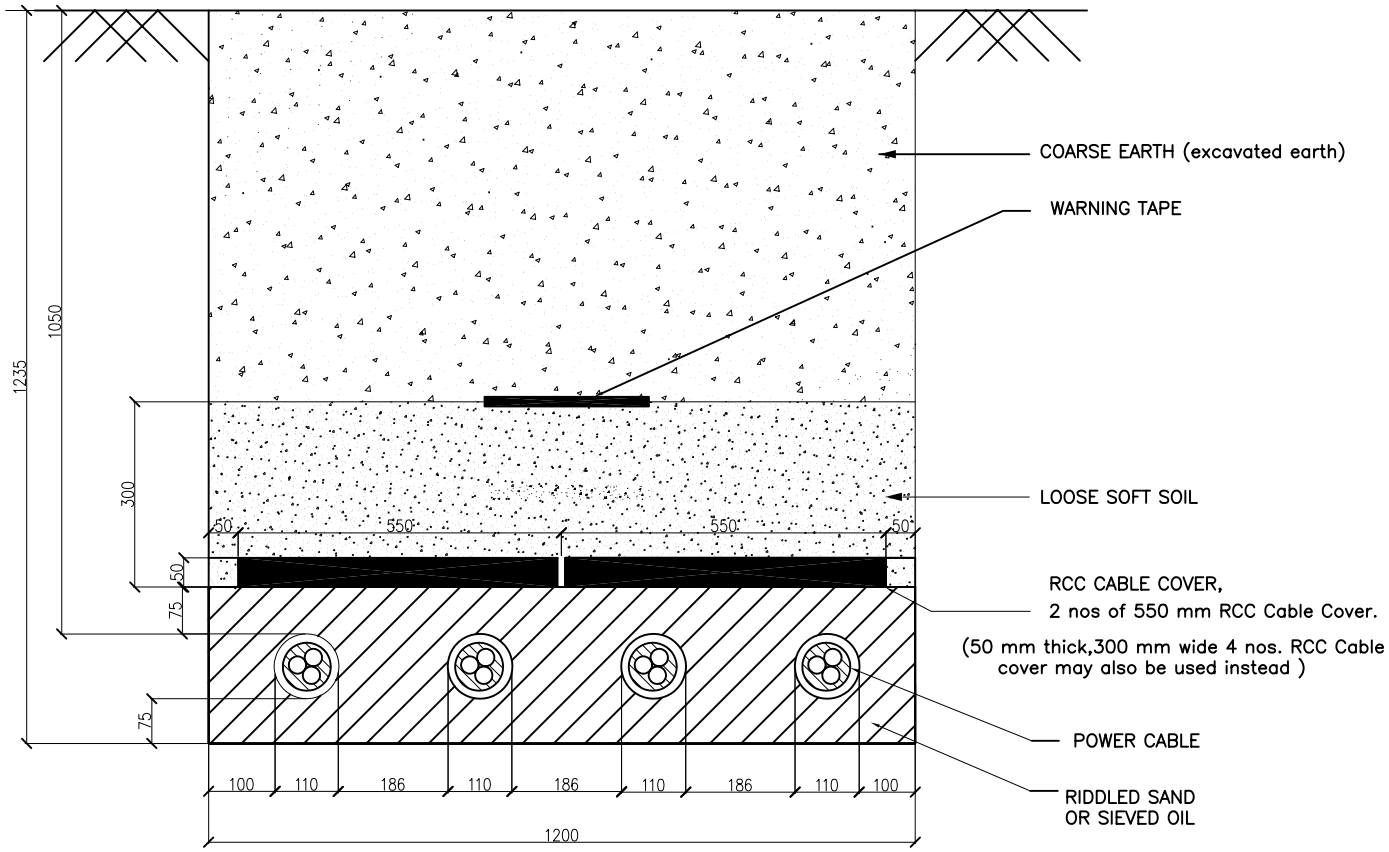
DRAWING # 5 B



TYPICAL DETAILS FOR 33KV BURRIED CABLE FOR FOUR CIRCUIT
TYPE – B 3

DRAWN	DS	TITLE:–	BSES
CHECKED	SGD	TRENCH DRAWING FOR	
APPD.	D.GUHA	3C X 400MM2, 33KV	
DATE		FOUR CIRCUIT	REV. 00
SCALE		XLPE CABLE	

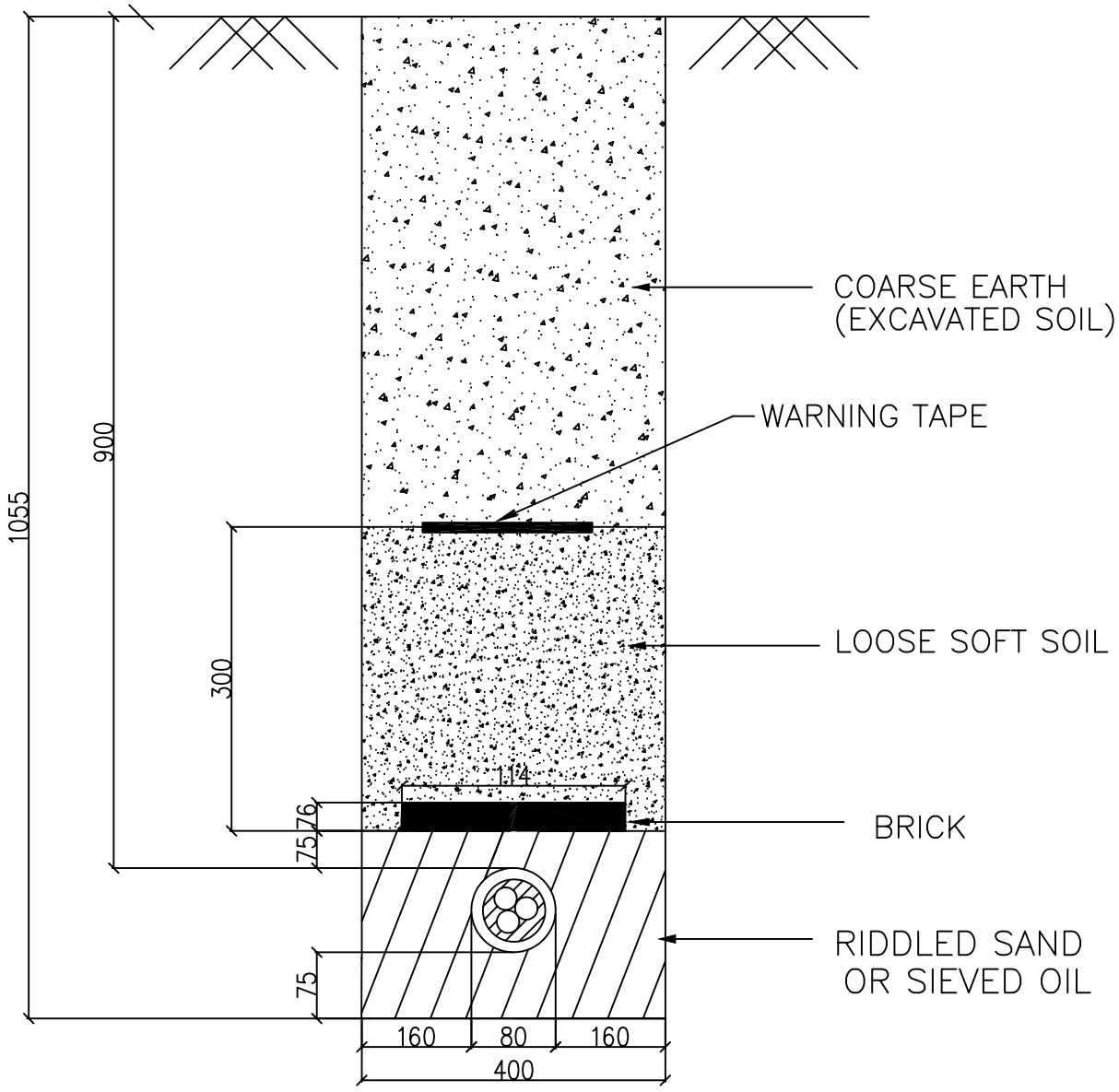
DRAWING # 5 C



TYPICAL DETAILS FOR 33KV BURRIED CABLE FOR FOUR CIRCUIT
TYPE – C 1

DRAWN	DS	TITLE:–	BSES
CHECKED	SGD	TRENCH DRAWING FOR	
APPD.	D.GUHA	3C X 400MM2, 33KV	
DATE		FOUR CIRCUIT	REV. 00
SCALE		XLPE CABLE	

DRAWING # 6

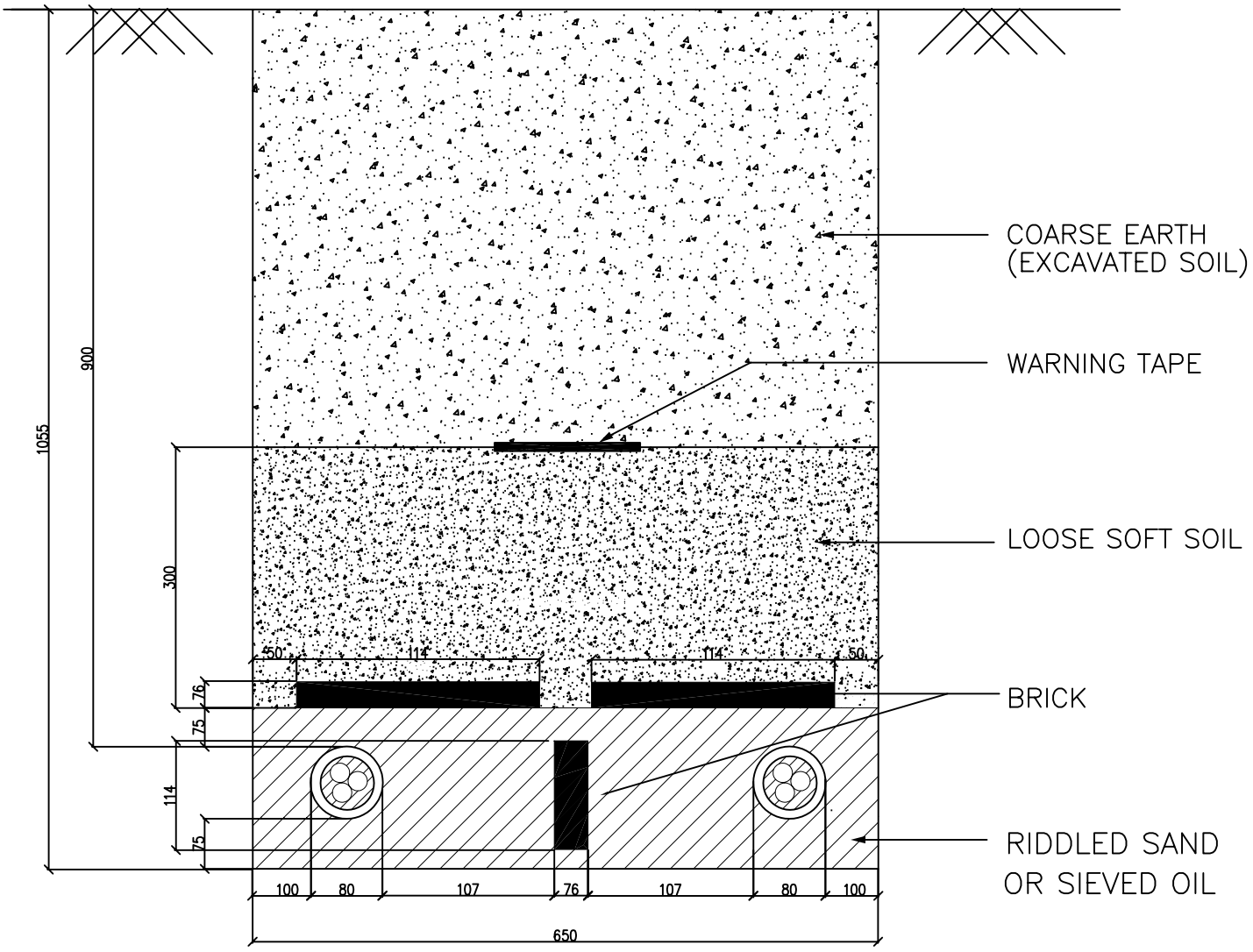


TYPICAL DETAILS FOR 11KV BURRIED CABLE FOR SINGLE CIRCUIT

TYPE – A 2

DRAWN	DS	TITLE:–	BSES
CHECKED	SGD	TRENCH DRAWING FOR	
APPD.	D.GUHA	3C X 300 Sq. mm	
DATE		11KV SINGLE CIRCUIT	REV. 00
SCALE		XLPE CABLE	

DRAWING # 7

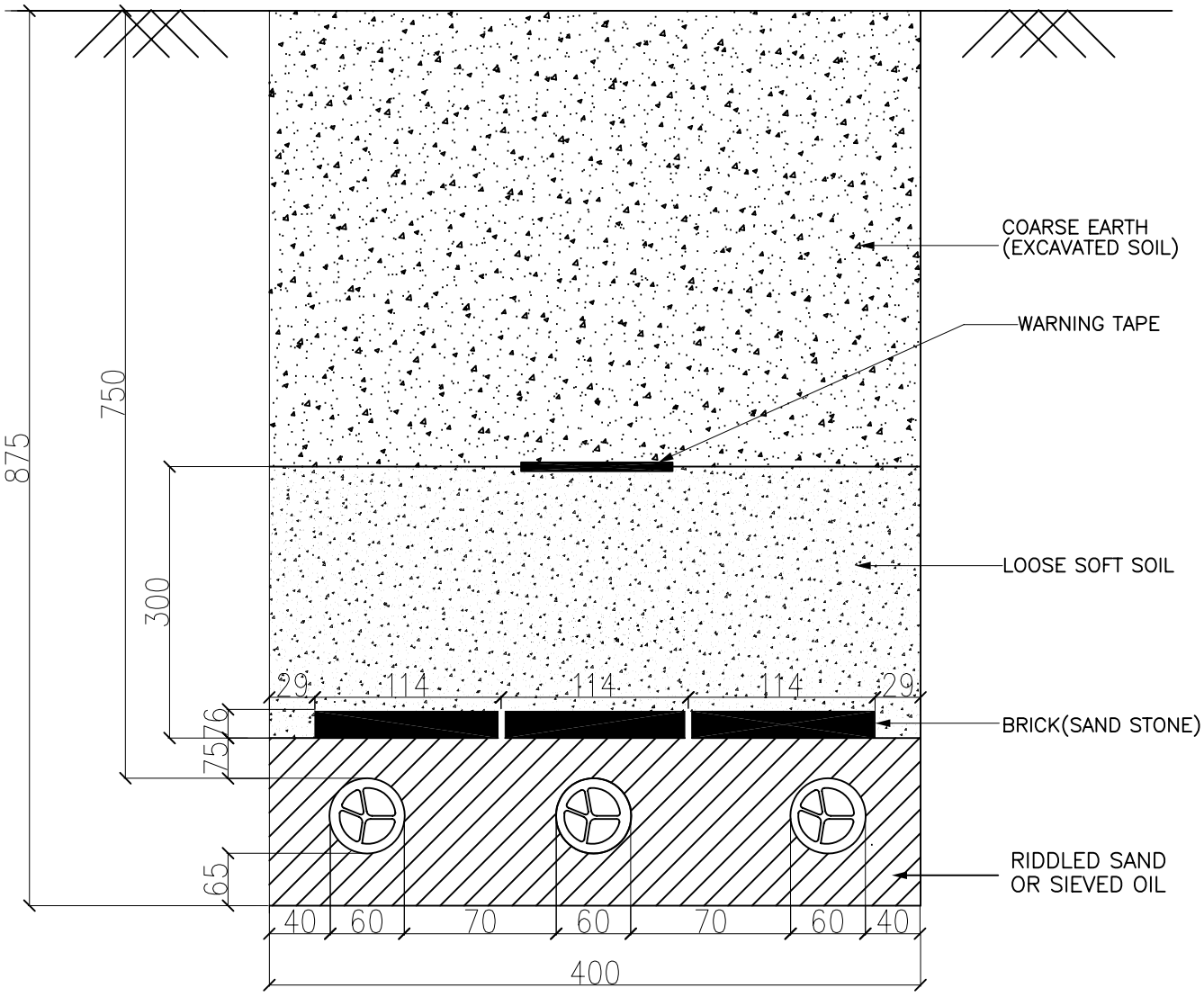


TYPICAL DETAILS FOR 11KV BURRIED CABLE FOR TWO CIRCUIT

TYPE – B 1

DRAWN	DS	TITLE:– TRENCH DRAWING FOR 3C X 300 mm Sq. or 3C X 150 mm sq II KV DOUBLE CIRCUIT XLPE CABLE	BSES
CHECKED	SGD		
APPD.	D.GUHA		
DATE			REV. 00
SCALE			

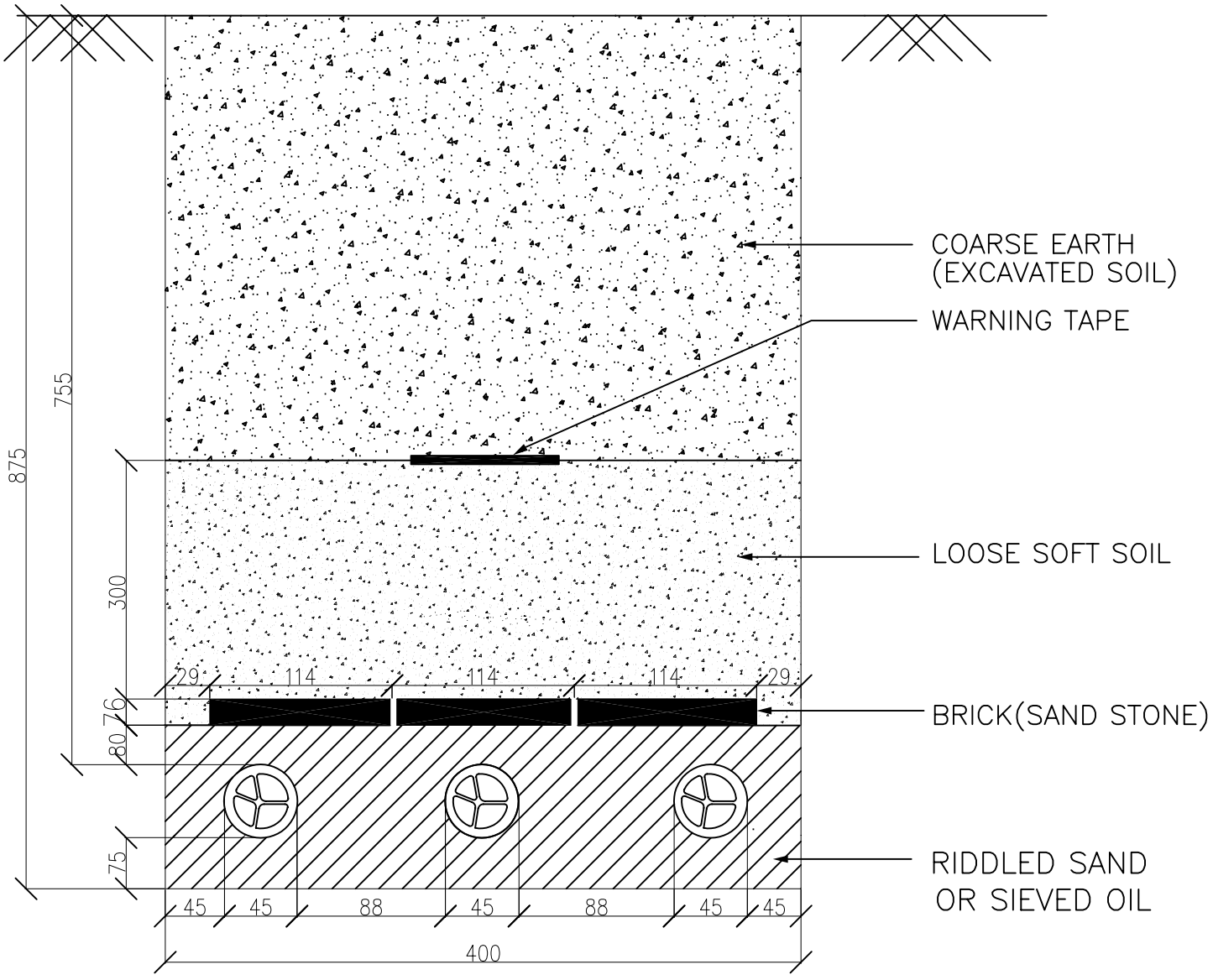
DRAWING # 8



TYPICAL DETAILS FOR 1.1KV BURRIED CABLE
TYPE – A 1

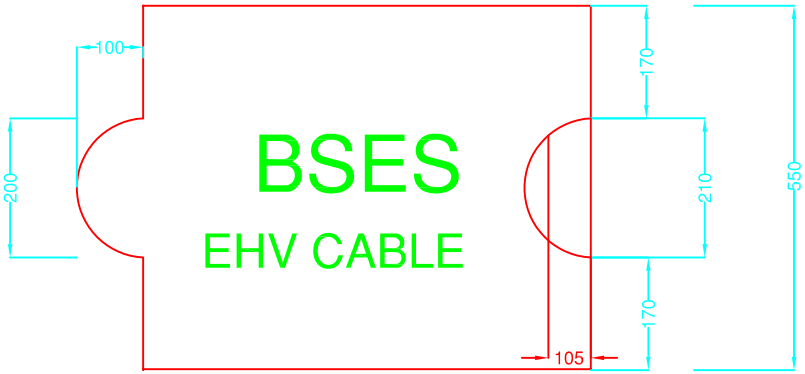
DRAWN	DS	TITLE:– TRENCH DRAWING FOR 3.5Cx300Sqmm 1.1 KV XLPE CABLE	BSES
CHECKED	SGD		
APPD.	D.GUHA		
DATE			REV. 00
SCALE			

DRAWING # 9



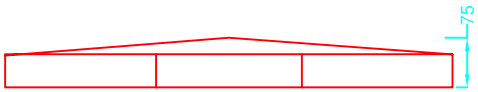
TYPICAL DETAILS FOR 1.1KV BURRIED CABLE
TYPE – A 1

DRAWN	DS	TITLE:–	BSES
CHECKED	SGD	TRENCH DRAWING FOR	
APPD.	D.GUHA	3.5Cx150Sqmm 1.1 KV	
DATE		XLPE CABLE	REV. 00
SCALE			

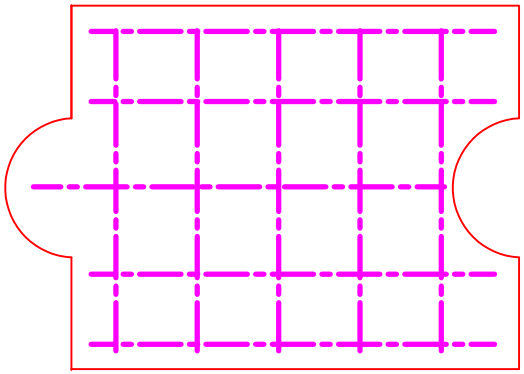


PLAN

ELEVATION



SIDE VIEW



NOTE -

(i) All dimensions are in MM.

(ii) Concrete Mix 1 : 2 : 4

(iii) MS rod - 6 MM Ø

CABLE COVER FOR EHV CABLES TYPE - A.

1. STEEL ROD - AS PER IS 432/1139

2. CONCRETE MIX SHALL BE NOT LESS THAN M200 GRADE AS PER IS 456.

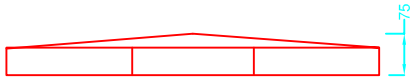
3. MOULDING SHALL BE WITH COMPACTION NOT LESS THAN 7 MN/Sq.m.(70 kgf/Sqcm)

DRAWN		TITLE:– CABLE COVER FOR EHV CABLE TYPE – A	BSES
CHECKED			
APPD.			
DATE			REV. 00
SCALE			

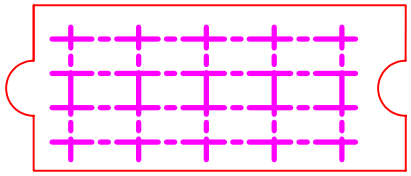
PLAN

1. STEEL ROD - AS PER IS 432/1139
2. CONCRETE MIX SHALL BE NOT LESS THAN M200 GRADE AS PER IS 456.
3. MOULDING SHALL BE WITH COMPACTION NOT LESS THAN 7 MN/Sq.m.(70 kgf/Sqcm)

ELEVATION



SIDE VIEW



NOTE -

(i) All dimensions are in MM.

(ii) Concrete Mix 1 : 2 : 4

(iii) MS rod - 6 MM Ø

CABLE COVER FOR EHV CABLES TYPE B.

DRAWN		TITLE:– CABLE COVER FOR EHV CABLES TYPE – B	BSES
CHECKED			
APPD.			
DATE			REV. 00
SCALE			

Annexure-7: Barricading and Safety

1. Dimensions of barricading- Height- 2 mtr, Length- 1.5 mtr. Refer drawing enclosed with tech spec for more details.
2. There shall not have any gap in between two barricades. Edge to edge shall be intact.
3. LED Bacon light shall be placed at 1st and 4th barricade and same shall be continue
4. Name, painting, colour, clean ness etc. shall be done on regular basis.
5. Vendor to ensure that traffic management shall not be excuse of work execution. The contactor shall not undertake loading and unloading at carriageways obstructing the free flow of vehicular traffic and encroachment of existing roads by the contactor applying the excuse of work execution.
6. Full height fence, barriers, barricades etc. shall be erected around the site in order to prevent the working area from the risk of accidents due to speedy vehicular movement. Same the way barricades protect the road users from the danger due to construction equipment and temporary structures.
7. The structure dimensions of the barricades , material and composition, its colour scheme, BSES logo and details shall be in accordance with specification and drawing laid down in the tender documents.
8. All the barricades shall be erected as per the design requirements of employer, numbered painted and maintained in good condition and also barricade in charge maintain a barricade register at site
9. All barricades shall be conspicuously seen in the dark/night time by the road users so that no vehicle hits the barricades. Conspicuity shall be ensured by affixing retro reflective strips of required size and shape at appropriate angle at bottom and middle portion of the barricades at a minimum gap of 1000 mm. In addition minimum one red light /red blinker and red beacon light should be placed at the top of each barricade.
10. No dust deposit at the front side of barricades.
11. Cable drum shall be returnable and vendor shall take it back (by bye back process) from site at their own risk and cost.
12. Once cable lying complete of a drum, within two days empty drum shall be removed from site by bye back process.
13. Trained traffic marshal with all PPE and traffic control light (Red and Green) shall be placed at site for 24x7.
14. No excuse of theft (beyond 6 hrs. of FIR) shall be acceptable.
15. During execution of job, any damage to other agency's properties shall be counted in vendor account and necessary action shall be taken by vendor to recover, repair etc.
16. Excess earth shall be removed from site after back filling. Site to be cleared to avoid flowing of dust. Barricades to be removed from site with in 24 hrs. after completion of job.
17. During non working hrs. vendor to ensure presence of supervisor for controlling any event from locals.
18. PPEs

    - Helmets

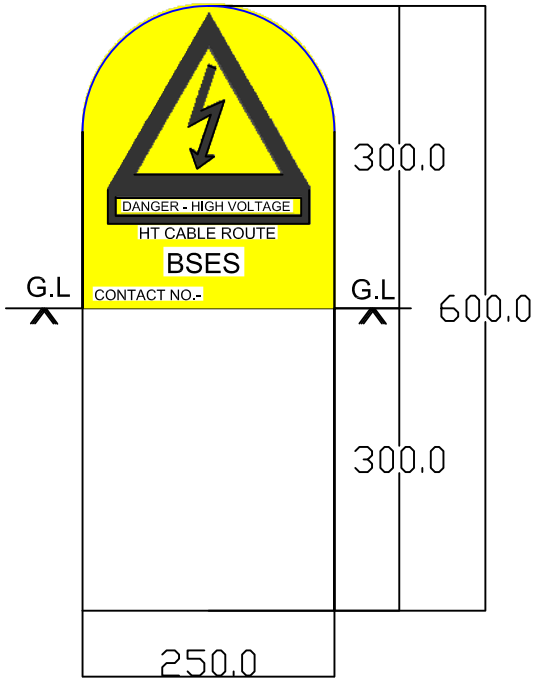
- Mask
- Jacket
- Shoes
- First Aid Box etc.

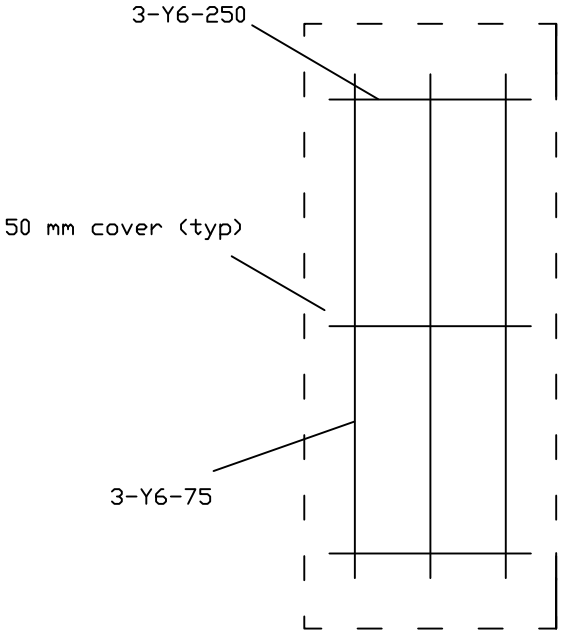
Shall be available at site 24x7. Zero tolerance on absence of PPEs to the working personnel. No excuse shall be acceptable in this regards.

19. GPR/Scanning shall be done by vendor of whole the route and same shall be submitted to BRPL. This work shall be done by vendor before execution of job.
20. Jointing TAT- Jointing to start within 48 hrs. and shall be completed by 96 hrs.+1 day.
21. Lifting of cable drums with hydraulic machine, pulling of cable from top end of drum with pulling machine (hydraulic winch) is mandatory.
22. Violation on barricading guideline and safety norms, a fine of Rs.5000 /day shall be imposed. BRPL inspector/engineer in-charge shall be empowered to impose the above penalty.

Annexure # 8 – ROUTE MARKER AND BARRICADING DRAWING

DETAIL OF HT CABLE ROUTE MARKER (RCC) - BSES





Notes:-

1	RCC Cable route marker with 6 mm Dia. Road and M25 concrete grade.
2	The litter/number shall be engraved on both the side route marker.
3	All dimentions are in mm unless specified.
4	Thickness of RCC shall be 75mm.
5	Yellow colour shall be visible above ground level.
6	Each route marker to be placed at an internal 50 mtr. and at every turn of route.
7	All kind of paint on route marker shall be in the scope of manufacturer.

DRAWN	R.K.JANA
CHECKED	P.B
REVIEWED	M.B
APPO.	K.A
DATE	16.08.16

TITLE:-

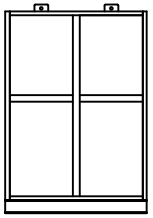
DETAIL OF HT CABLE ROUTE MAKER (RCC).

BSES Rajdhani Power Ltd.

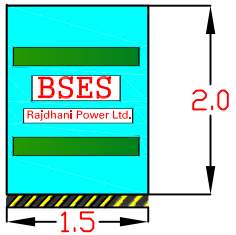
DWG. NO.

BSES-RM-RCC-01, R0

BARRICADING FOR CABLE LAYING WORK



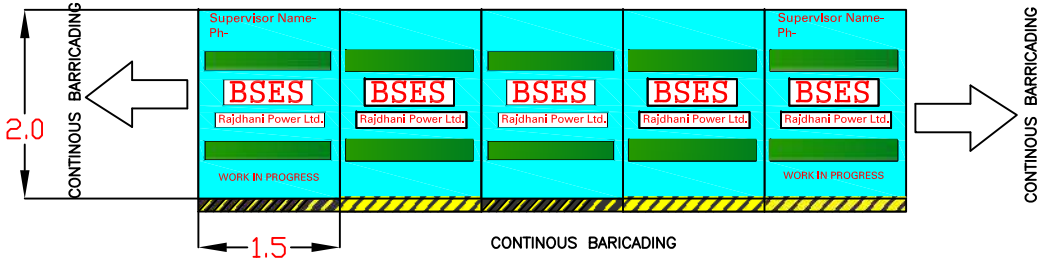
BACK SIDE VIEW



FRONT SIDE VIEW

NOTE:

1. Barricading shall provided through out the route length as well as project location.
2. Plate shall be MS
3. Supervisour name, ph no, work in progress, shall be mentioned at every 1st and 4th plate of barricading through out the route.
4. Becon Light shall be provided through out the length.
5. Traffic marshal shall be Provided for traffic control by vendor.
6. Violation of safety norms and barricading shall be reviewed by BRPL and shall impose fine of Rs.5000/day as well as termination of work and short close of award.
7. After finishing of job vendor shall take return all the plate at their own risk and cost.
8. PPE's like Helmet, Mask, Jacket, safety boot etc. shall be provided vendor to all worker.



CONTINOUS BARICADING

DRAWN	R.K.JANA	TITLE:– DRAWING–BARRICADING FOR CABLE LAYING WORK	BSES Rajdhani Power Limited
CHECKED	P.B.		
REVIEWED	A.S.		
APPD.	V.P.		
DATE	29.06.17		

Annexure#9-Note for HDPE Pipe Diameter in Cable Laying

1) Primarily our intent for laying cable will be through open trench only.
2) Trench dimensions shall be as per the standards which mentioned as below table

Sl. no.	Cable	Trench Details (mm)		
		Depth (single and double run)	Width (Single Run)	Width (Double Run)
1	LT Cable	875	400	400
2	11 kv	1055	400	650
3	33 kv	1235	400	650
4	66 Kv	1445	650	1200

3) QC team will do stage inspection after completion of digging to validate the depth of trench and will give approval for issuing of cable.
4) Execution in charge to ensure the cable laying work.
5) QC team will also inspection the laying work to validate the laying as per standards before back filling.
6) In case of site constraints, trench less cable laying shall be allowed as per the followings-
   a) Cable laying up to 50 mtr through trenchless will be allowed with approval of circle head (O&M) for road crossing or site constraints. Site photos of constraints shall be reviewed before approval by circle head.
   b) Absence of permission for digging- written disapproval by road owing agency and appropriate approval by circle head (for O&M Jobs), by O&M head (for 11kV, P&C job) and by EHV head (for EHV Jobs)
   c) The size of HDPE (PN6, PE80) pipe shall be as per the guidelines of IS-1255, 1983, clause no-6.3.4.3. Details mentioned below in below table-

Sl. No	Cable	Recommended Dia of HDPE pipe (mm)
1	66kV, 3CX300	225
2	66kV, 1CX630	180
3	66kV, 1CX1000	180
4	33kV, 3CX400	180
5	11kV, 3CX300	160
6	11kV, 3CX150	160

d) In-case of using lower size of HDPE pipe due to site conditions, the deviation for using lower HDPE pipe from above table, written approval must be taken through technical committee. Photos of the challenges while apparently the same will be reviewed by technical committee.

(However, HDPE pipe size with less than 1.5XOD of cable shall not be allowed at any stage)

BSES

Technical Specification

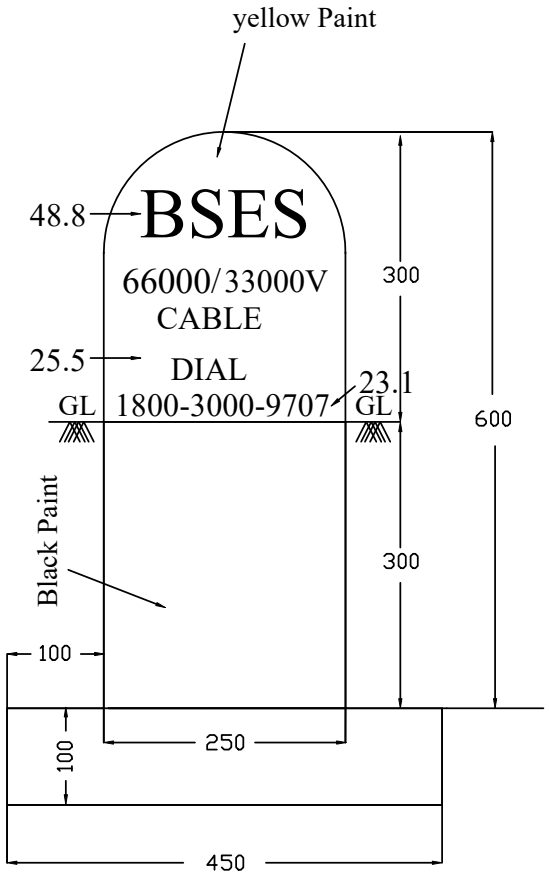
for

Drawings of Miscellaneous RCC Hardware Items

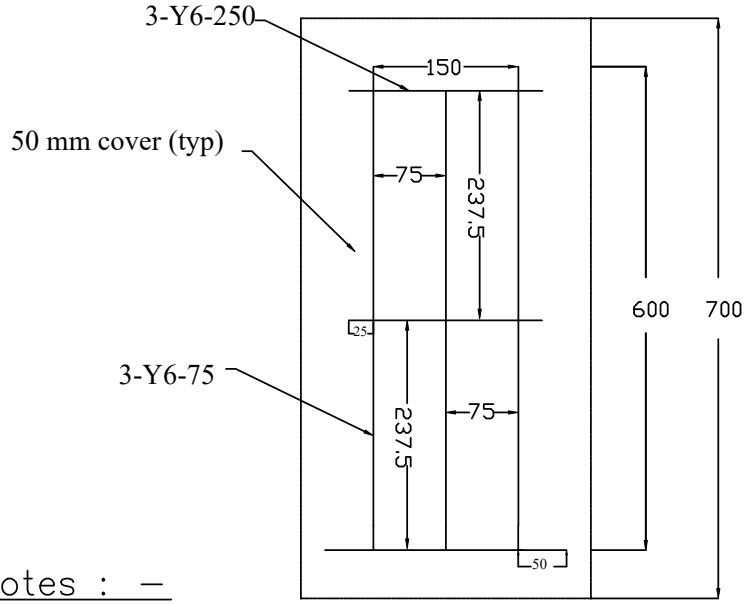
Specification no – BSES-TS-59-RCCH-R0

Rev:		0
Date:		17 May 2022
Pages:		6
Prepared by	Akhilesh Chaudhary	
	Gautam Deka	
Reviewed by	Srinivas Gopu	
	Amit Tomar	
Approved by	Gaurav Sharma	
	Gopal Nariya	

DETAIL OF HIGH VOLTAGE CABLE ROUTE MARKER (RCC) -BSES



Reinforcement Detail



Notes : –

1	RCC cable route marker with 6mm Dia Rod and M25 concrete grade.
2	All the details shall be emgraved on both the sides of route maker
3	All dimentions are in mm, unless specified.
4	Thickness of RCC shall be 75mm.
5	Yellow colour shall be visible about ground level.
6	Eachcable joint marker to be placed at cable joints.
7	All kind of point on route marker shall be in the scope of manufacturer.
8	RCC Marker shall be painted with "Texture Paint" & quality shall be maintainted.

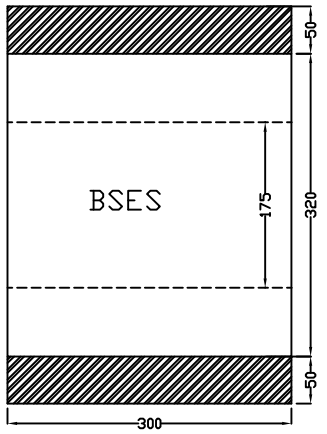
Title :–

DETAIL OF HIGH VOLTAGE CABLE ROUTE MARKER (RCC)

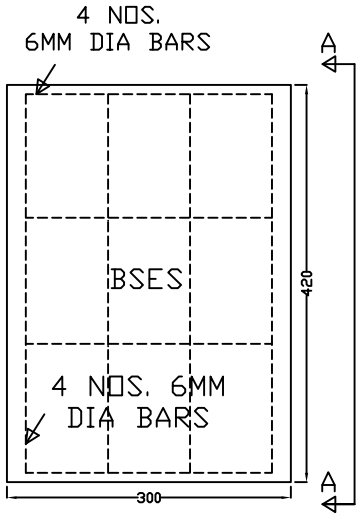
BSES

DWG. NO.

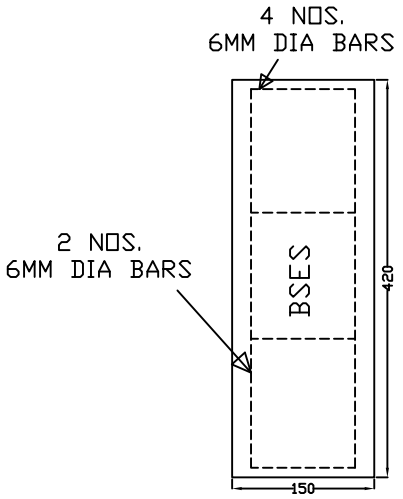
BSES–RM–RCC–01,R0



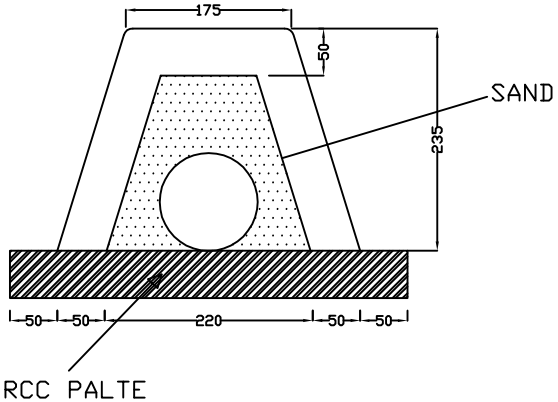
A. PLAN



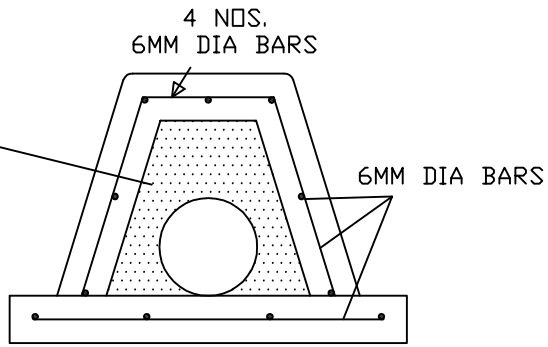
B. REINFORCEMENT DETAILS
300MM LENTH RCC PLATE



C. REINFORCEMENT DETAILS
150MM LENTH RCC PLATE



D. ELEVATION



E. REINFORCEMENT DETAILS

NOTE-

1. ALL DIMENSIONS ARE IN MM
2. CONCRETE MIX 1: 1.5: 3
3. STEEL TMT/RIB BAR 6MM DIA AS PER IS 432/1139
4. CONCRETE MIX SHALL BE NOT LESS THAN M20 /1: 1.5: 3 GRADE AS PER IS 456
5. MOULDING SHALL BE WITH COMPACTION NOT LESS THAN 7N/MMSQ (70 KGF/SQCM)
6. REINFORCEMENT DETAIL AS PER IS 5820/IS 456
7. COVER- 20MM

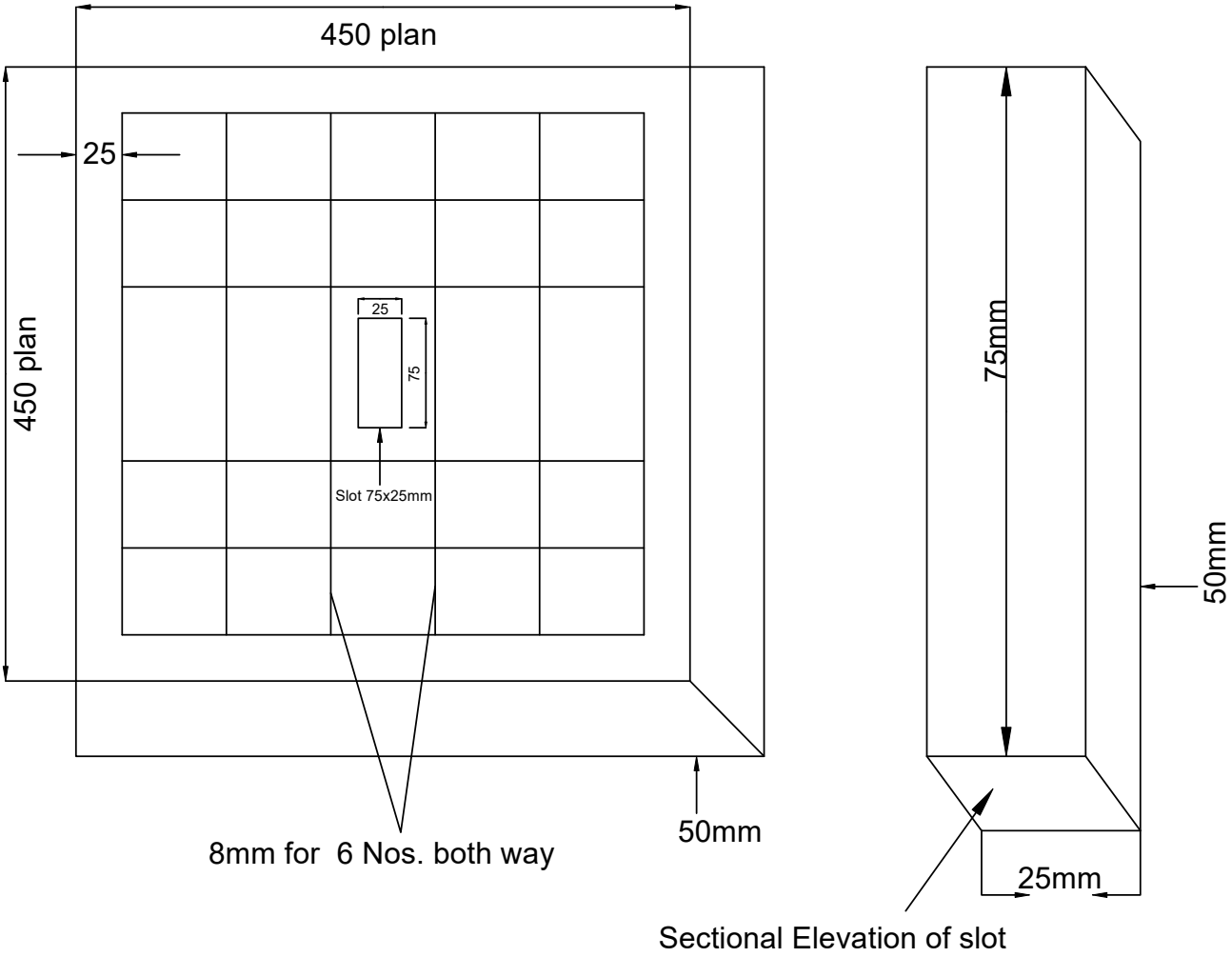
DRAWING OF CABLE COVER AT CABLE JOINTS

DRAWN	RAJESH
CHECKED	S.G
APPD.	G.S
DATE	12.04.22
SCALE	NTS

BSES Yamuna Power Limited

TITLE:-
DRAWING OF CABLE COVER AT CABLE JOINTS

RCC BASE PLATE SIZE 450X450X50mm

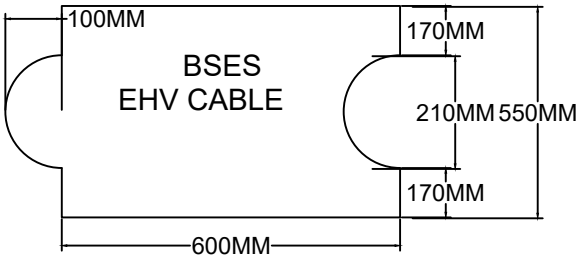


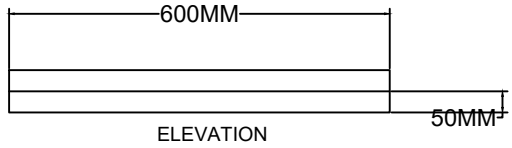
NOTES :-

1. Nominal Mix of concrete 1:2:4:M:20
2. Reinforcement shall be welded / Binded at Junctions.
3. Reinforcement :- 8mm dia for 6 nos. each side.
4. IS AND ITS LATEST AMMENDMENTS SHALL BE APPLICABLE.

TITLE :-	BSES
RCC BASE PLATE	DRAWING NO.

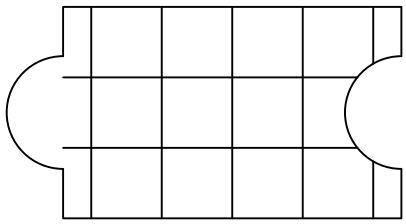
PLAN





ELEVATION

SIDE VIEW



REINFORCEMENT DETAILS

NOTES:-

1.ALL DIMENSIONS ARE IN MM

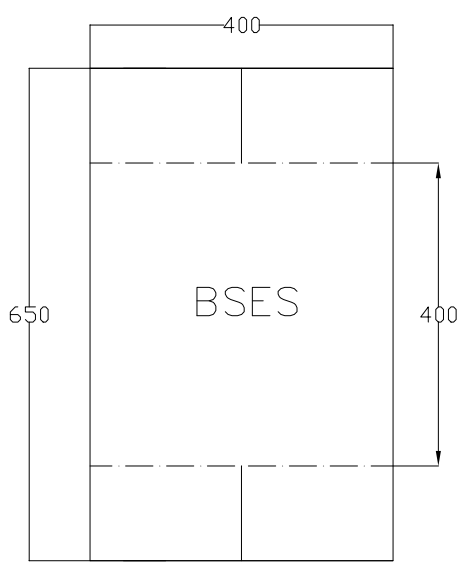
2.CONCRETE MIX 1:2:4

3.MS ROD -6MM ⌀

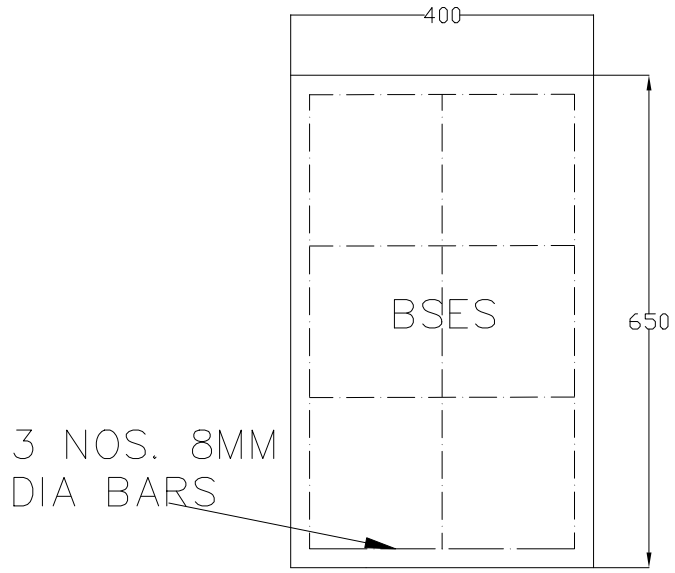
4.STEEL ROD -AS PER IS 423/1139

OWNER- BSES		
TITLE-CABLE COVER (SLAB) DATE-13.04.2022		
DRAWN BY	CHECKED BY	APPROVED BY

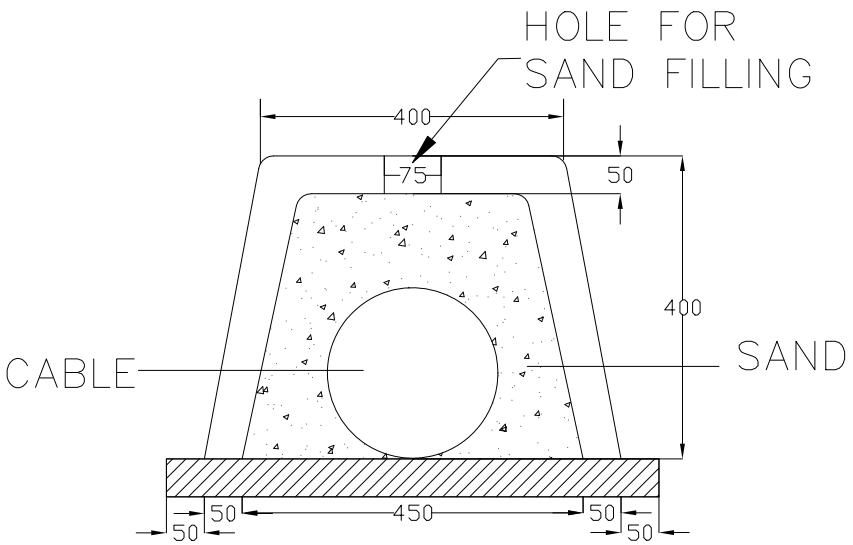
DRAWING OF COFFIN FOR JOINTS



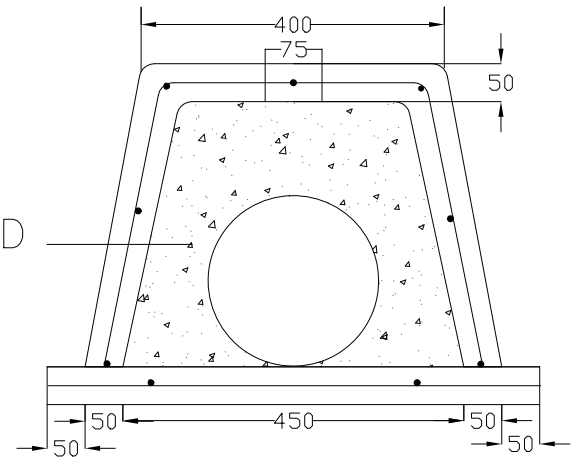
A. PLAN



B. REINFORCEMENT DETAILS 300 MM LENGTH RCC PLATE



D. ELEVATION



E. REINFORCEMENT DETAILS

NOTES :-

1. ALL DIMENSIONS ARE IN MM
2. CONCRETE MIX 1:1.5:3

TITLE :-

DRAWING OF COFFIN COVER AT CABLE JOINTS

BSES

DRAWING NO.

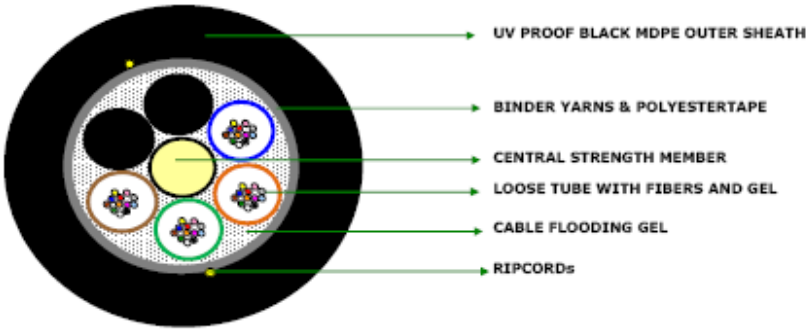
Annexure I:
Details of Optical Fiber Cable

48F Composite Fiber Multitube (MDPE) Single Sheath Duct Lite Optical Fiber Cable

PRODUCT INFORMATION

Fiber			
Single Mode Optical Fiber	**36 Nos.**	**Fiber ITU.T - G.657A1**	
Maximum Cabled Fiber Attenuation dB/Km		1310nm : 0.36 & 1550nm : 0.23 & 1625nm : 0.26	
Multi Mode Optical Fiber	**12 Nos.**	**Fiber OM2 : 50/125**	
Maximum Cabled Fiber Attenuation dB/Km		8500nm : 3.5 & 1300nm : 1.5	
Loose Tube			
Filling Gel		Thixotropic gel to prevent water ingress in loose tube (ITCO T 250)	
Fiber Per Tube	12 Nos.		
Tube	4 Nos.	Thermoplastic Material (PBT)	
Core			
Central Strength Member		Fibre Reinforced Plastic (FRP) to provide tensile strength and antibuckling properties.	
Filler	2 Nos.	Polyethylene Black	
Water blocking elements		Cable flooding gel is added in interstices of core to prevent water ingress in the cable core (ITCO C 480)	
Core Covering		Binder and Polyester Tape	
Cable			
Rip Cord	2 Nos.	Polyester Based Twisted Yarn	Applied below Outer Sheath
Outer Sheathing		UV Proof Black MDPE (ME 6052/ME 6056)	2.2 mm Nominal Thickness

CONSTRUCTIONAL DETAILS



Typical construction Diagram - Not to Scale

OPTICAL FIBER CABLE PERFORMANCE

MECHANICAL				ENVIRONMENTAL	
Max. Tensile strength	2500 N	**Crush Resistance**	2000 N / 100x100 mm	**Temp. Performance**	
Minimum Bend Radius	20 D	**Impact strength**	25 Nm.	**Installation**	-20°C to +80°C
Repeated Bending Test	20 D,30Cycle	**Torsion**	±180°	**Service**	-20°C to +80°C
				Storage	-20°C to +80°C
Water Penetration	1m head, 3m samples, 24 Hr			**Drip Test**	30 cm, 70°C, 24 hr

Tests shall be carried out as per IEC 60793 & IEC 60794-1-2/GR 20 Standards. Change in attenuations shall be ≤ 0.05 dB.

COLOR DETAILS

Optical Fibre Colour	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Pink, Aqua.
Loose Tube Colour	For G657A1 : Blue, Orange, Green & For OM2 : Brown.
Outer Sheath Colour	Black

PHYSICAL PARAMETERS

Cable Diameter (mm)	11.75 ± 0.25	**Cable Wt. (Kg/Km)**	114 ± 10%	**Cable Length:**	2 Km ± 5%

PRINTING DETAILS

Cable Printing details (White - Hot Foil Emb.)	48F TELEPHONE SYMBOL LASER SYMBOL MONTH & YEAR OF MANUFACTURE LENGTH CODE METER MARKING

The accuracy of marking shall be ± 0.5%. Occasional loss of printing & remarking shall be as per Bell core GR 20 and this supercedes the earlier markings.

BSES

TECHNICAL SPECIFICATION

FOR

RFID ACTIVE & PASSIVE BALL / RING

Specification No: GN101-03-SP-148-00

BSES RAJDHANI POWER LTD			
Prepared By	Abhay Gupta		R0
	Pronab Bairagi	05/11/18	
Reviewed By	Amit Tomar	05.11.18	2-Nov-18
Approved By	K. Sheshadri	05/11/18.	Page 1 of 13
Registered Office: BSES Bhawan, Nehru Place, Delhi - 110019			

BSES Rajdhani Power Ltd	GN101-03-SP-148-00

TECHNICAL SPECIFICATIONS OF RFID ACTIVE & PASSIVE BALL / RING

CONTENTS

REVISION RECORD

Rev. No.	Revision Date	Item/ clause no:	Page No.	Nature of Change	Approved by

TECHNICAL SPECIFICATIONS OF RFID ACTIVE & PASSIVE BALL / RING

1. SCOPE

The specification provides technical requirements and usage of RFID Active & Passive Ball / Ring. It shall be traced with a portable route tracer device specified herein to quickly pinpoint the location of buried facilities like cable runs, cable joints, splices, vaults, conduits etc. during the construction, installation or maintenance work across BSES Rajdhani Power Ltd, network, New Delhi.

The portable route tracer device shall be able to find the location of ball / ring and define the place and depth's position. In addition, the RFID route tracer device shall have the capability to save RFID serial number of Ball / Ring being installed on site during installation with an inbuilt GPS module that should allow the RFID route tracer to allow navigation back to the RFID route tracer.

2. CLIMATIC CONDITIONS

2.1	Average grade atmospheric condition	Heavily polluted, dry
2.2	Maximum altitude above sea level	1000m
2.3	Ambient Air temperature	Highest : 50°C Average: 30°C Minimum : 0°C
2.4	Relative Humidity	100% max
2.5	Thermal resistivity of soil	150°C cm/W (max)
2.6	Seismic Zone	4
2.7	Rainfall	750mm concentrated in four months

3. GENERAL TECHNICAL REQUIREMENT

- Every RFID ball / ring shall have a unique Hexadecimal code
- The data fed in the active electronic ball / ring shall be accessible from computer and mobile from anywhere which can be saved in the computer or mobile also
- The identification code of passive electronic ball/ring shall be accessible from computer and mobile from anywhere which can be saved in computer and mobile also
- While assessing the data of RFID active ball/ring from computer or mobile, the user shall be able to-
    - See the location of the electronic Ball / Ring
    - See the Hexadecimal code of the electronic Ball / Ring
    - Shall be able to see the Ball / Ring and feeder details
    - Further details shall be as per Clause 4.1 of this technical specification
- The ball / ring shall be detectable if placed horizontally / vertically or at any angle inside the ground
- The Route Tracer (with GPS module) shall have USB accessibility to allow data transfer to computer/mobile
- Google mapping facility of feeder by using active and passive RFID ring/ball.

3.1 ACTIVE BALL / RING

- The Active Ball / Ring shall have facility to feed data by tracer or by computer/mobile as per the BRPL requirement.
- Following are the technical requirements of the active ball / ring-

S. No	Specification	BRPL Requirement
1	Data Storage	Ability to write, read and lock programmed information into the Ball / Ring using locator or by computer/mobile for accessing feeder information.

TECHNICAL SPECIFICATIONS OF RFID ACTIVE & PASSIVE BALL / RING

S. No	Specification	BRPL Requirement
2	Data	Below data shall be feed inside the active Ball / Ring or locator- • BRPL | Vendor Name | Feeder Details • BRPL site supervisor | Vendor's supervisor at site • Jointing details – Make of jointing kit | Cable grade and type | Joint type • PO No. of jointing kit • Date of installation of ball | Jointer name
3	Design and shape	Ball / Ring
4	Free floating coil	Free floating coil for self leveling, horizontal position (floating coil will always be horizontal and provide accurate location of joint)/ Ring capable of being detectable from all directions.
5	Temperature effect	Non freezing fluid/ Other
7	Material	Made of High dense plastic
8	Frequency range	169.8 kHz standard / As per manufacturer's standard for power utility
9	Colour	Red/orange
10	Diameter	Outer Dia- 150mm max for ball, 250 mm for ring
11	Minimum Depth range	As per the table mentioned in the clause 4.1
12	Weight	0.4 kg max for both ring and ball
13	Power Source	Self generated, no batteries required for signal transmission

3.2 PASSIVE BALL / RING

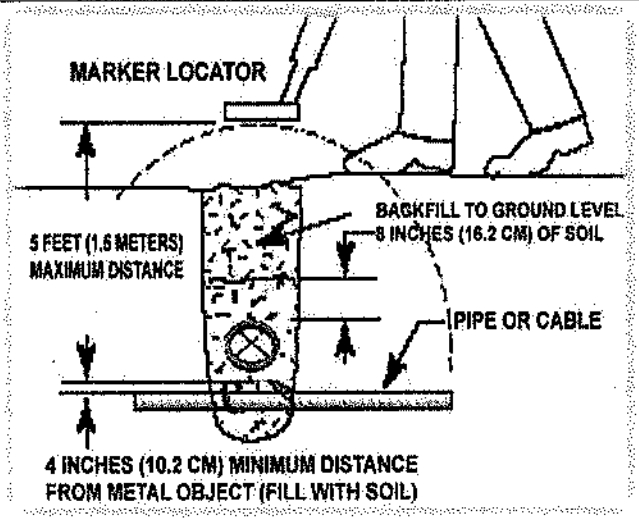
The Passive ball / Rings shall be buried at every 50m on the cable route from the point of starting of circuit.

Following are the technical requirements-

S. No	Specification	BRPL Requirement
1	Design and Shape	Ball / Ring
2	Free Floating Coil	Free floating coil for self leveling, horizontal position (floating coil will always be horizontal and provide accurate location of cable route)/ Or ring coil should be detectable from all direction.
3	Temperature effect	Non freezing liquid/ Other
4	Application	To trace cable route
5	Material	Made of high density plastic
6	Frequency Range	169.8 kHz standard / As per manufacturer's standard
7	Colour	Red/orange
8	Diameter	Outer dia- 150 mm max for ball, 250 mm max for ring.
9	Depth Range	Applicable as mentioned in the clause no-4.1
10	Weight	0.4 kg for both ball and ring
11	Power Source	Self generated, no batteries required for signal transmission

4. INSTALLATION OF BALL / RING

- During Backfill of trench in which pipe or cable is being laid.
- Continue Backfilling by sand or earth



4.1 CABLE TRENCH DETAILS

A	11 KV Cables	Width (mm)	Depth (mm)
a	3Cx150 / 300 mm^2 - Single Circuit	400	1055
b	3Cx150 / 300 mm^2 -Double Circuit	650	1055
B	33 kV Cables	Width (mm)	Depth (mm)
a	3Cx400 mm^2 - Single Circuit	400	1235
b	3Cx400 mm^2 - Double Circuit	650	1235
c	3Cx400 mm^2 - Quadruple Circuit	650	1235
d	3Cx400 mm^2 - Quadruple Circuit	650	1545
e	3Cx400 mm^2 - Quadruple Circuit	1200	1235
C	66 kV Cables	Width (mm)	Depth (mm)
a	1Cx630/1000 mm^2 - Single Circuit	650	1445
b	1Cx630/1000 mm^2 - Double circuit	1200	1445
c	3Cx300 mm^2 - Double circuit	1200	1445

5. GUARANTEE PERIOD

A guarantee period for RFID Ball / Ring of 25 years shall be provided the manufacturer.

6. TESTS

6.1 ACCEPTANCE TESTS RFID ACTIVE BALL

Sr. no.	Specification	Manufacturer to provide	Inspection Method by BRPL
1	Data Storage	Ability to write, read and lock programmed information into the Marker	Perform
2	Design and shape	Ball shape	Visual inspection
3	Free floating Coil	a free floating Coil for self leveling, Horizontal position	Visual inspection
4	Temperature effect	Non freezing fluid	Sample shall be sealed for NABL lab testing
5	Design and Shape	Made of high dense plastic	Visual inspection
6	Frequency Range	169.8 KHz	Review of document/Test Certificates
7	Colour	Red/Orange	Visual inspection
8	Dimension	As mentioned above	Perform and Measurement
9	Depth range	As per the table mentioned in the clause no-4.1	Perform
10	Weight	As mentioned above	Perform and Measurement

6.2 ACCEPTANCE TESTS RFID PASSIVE BALL

Sr. no.	Specification	Manufacturer to provide	Inspection Method by BRPL
1	Design and shape	Ball/ring shape	Visual inspection
2	Free floating Coil	A free floating Coil for self leveling, Horizontal position	Visual inspection
3	Temperature effect	Non freezing fluid	Sample shall be sealed for NABL lab testing
4	Design and Shape	Made of high dense plastic	Visual inspection
5	Frequency Range	169.8 KHz	Review of document/Test Certificates
6	Colour	Red/Orange	Visual inspection
7	Dimension	As per the requirement	Perform and Measurement
8	Depth range	As per the table mentioned in the clause no-4.1	Perform
9	Weight	As per the requirement	Perform and Measurement

7. INSPECTION

8.1	BRPL representative shall at all times be entitled to have access to the works and all places of the manufacturer/ distributor where RFID Active / Passive ball / ring shall be manufactured and the representative shall have full facilities for unrestricted inspection of the Manufacturer's works/ distributors place, raw materials, store process and process of manufacture and conducting necessary tests as may be deemed fit, for certifying the quality of product.

8.2	The Manufacturer shall keep BRPL informed in advance of the time of starting and of the progress of manufacturing of RFID active and passive ball / ring and route tracer in its various stages so that arrangements can be made for inspection.
8.3	No material shall be dispatched from its point of manufacture and works before it has been satisfactorily inspected, tested, and necessary dispatch instructions are issued in writing, except for the cases where waiver of Inspection is granted by BRPL, and even in this case also, written dispatch instructions will be issued. Any dispatches before the issue of Dispatch Instructions in writing will be liable for rejection and non acceptance by the consignee.
8.4	The acceptance of any quantity of material shall in no way relieve the Manufacturer of any of his responsibilities for meeting all requirements of the specification, and shall not prevent subsequent rejection if such material is later found to be defective.
8.5	Only soft copy of inspection report shall be furnished by manufacturer through mail. BRPL shall not receive any hard copy of report for their office record.

8. DOCUMENTATION

Submission of drawings, calculations, catalogues, manuals, test reports shall be as mentioned below:

8.1 DRAWING, DATA AND MANUALS

Cross-Sectional drawing shall show every feature of construction. This drawing shall also state the hexadecimal code to be printed on the ball / ring.

8.2 DOCUMENTS TO BE SUBMITTED ALONG WITHBID FOR TECHNICAL JUSTIFICATION

The vendor shall submit-

- Cross sectional drawing
- GTP (all data to appear)
- Type test certificates if any

Document Submission

- Submission of drawings, calculations, catalogues, manuals, test reports shall be as follows.

  Legend:

TECHNICAL SPECIFICATIONS OF RFID ACTIVE & PASSIVE BALL / RING

GTP : Guaranteed Technical Particulars
TTR : Type Test Report
RTR : Routine Test Report

	Documents Along with offer	After award of contract- for Approval	Final documents(after Approval)
GTP	1 copies	** 1 soft copy	** 1 soft copy + CD
Drawings	1 copies	** 1 soft copy	** 1 soft copy + CD
Calculations	1copies	** 1 soft copy	** 1 soft copy + CD
Catalogues & Manual	1 copy each		** 1 soft copy + CD
Test Report	1 copy each of TTR and sample RTR		** 1 soft copy + CD

** Soft copy and CD shall contain documents duly approved, signed and scanned

- The manufacturing of the RFID Ball/ Ring shall be strictly in accordance with the approved drawings and no deviation shall be permitted without the written approval of the BRPL. All manufacturing and fabrication work in connection with the RFID Ball/ Ring prior to the approval of the drawing shall be at manufacturer's risk.
- Approval of drawing etc. by the BRPL shall not relieve the Manufacturer of his responsibility and liability for ensuring correctness and correct interpretation of the latest revision of applicable standards, rules and codes of practices. The RFID Ball/ Ring shall conform in all respects to high standards of engineering, design, workmanship and latest revisions of relevant standards at the time of ordering and BRPL shall have the power to reject any work or material which in his judgment is not in full accordance therewith.

9. DELIVERY SCHEDULE

- Delivery period Start Date : From date of LOI / LOA
- Delivery period End Date : As agreed with manufacturer
- Material dispatch Clearance : After inspection, shall be issued by BRPL.

10. DEVIATION

- Deviations from this specification shall be listed separately by bidder clause wise (format given below) along with optional offer and has to submit the list along with bid/quotation. BRPL will review the deviations and if BRPL is agreed with the deviation, seller has to take written confirmation from BRPL on deviation during tender evaluation.

- In the absence of any separate list of deviations from the bidders with bid as well as written confirmation from BRPL on deviations, it will be assumed by the Buyer that the Seller complies with the Specification fully.

- Any deviations mentioned in any other submitted bid documents (i.e.in filled GTP, Catalog, BRPL old approval, buyer's/seller's standards etc) by seller without separate deviation sheets will not consider as a deviation from this tech spec at any stage of contract.

Deviation sheet format—

Sino	Document Name	Clause No.	Deviation	Reason	Merits to BRPL

Specification of HDPE Pipe

1) Scope : Supply of HDPE pipe
2) Service conditions:

HDPE pipe shall be suitable to use in following Climate conditions.		
2.1	Maximum ambient temperature	50 Deg C
2.2	Relative Humidity	0 to 96%
2.3	Maximum annual rainfall	790 mm
2.4	Atmosphere	Heavily polluted, dry, dust

3) Cable Details:

Sl. No	Cable Details	Approx Dia of Cable (mm)
1	66kV, 3CX300	125
2	66kV, 1CX630	80.5
3	66kV, 1CX1000	93
4	33kV, 3CX400	106
5	11kV, 3CX400	83
6	11kV, 3CX300	77
7	11kV, 3CX150	61
8	1.1kV, 4CX300	60

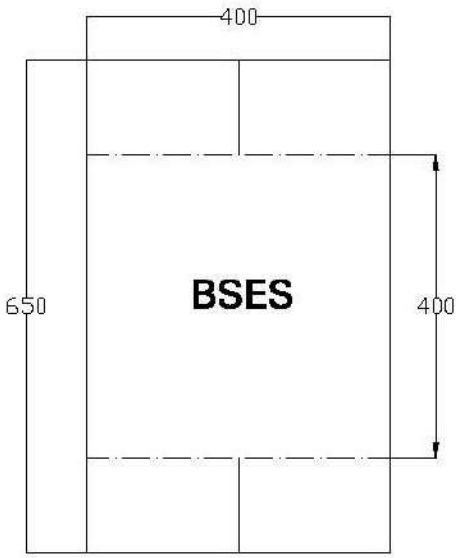
2. Technical requirement: HDPE pipe (PN6, PE80) , Wall thickness- as per IS 4984, 2016, Colour- Black
3. Selection of HDPE pipe diameter:

Sl. No	Cable	Recommended Dia of HDPE pipe (mm)
1	66kV, 3CX300	225
2	66kV, 1CX630	180

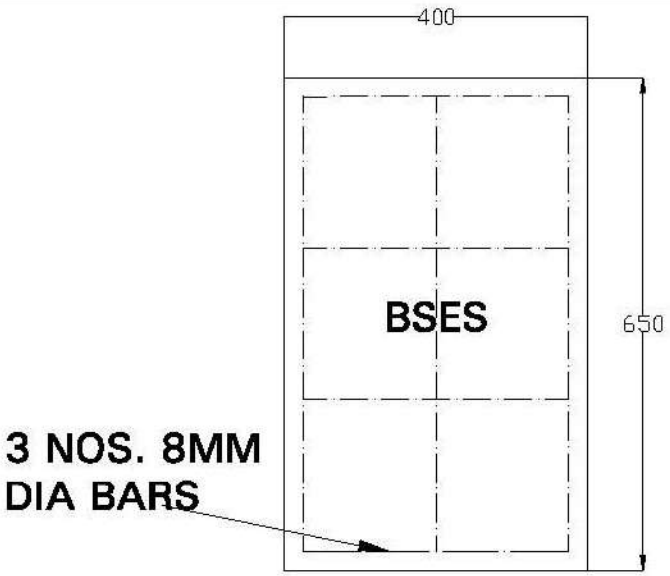
3	66kV, 1CX1000	180
4	33kV, 3CX400	180
5	11kV, 3CX400	160
6	11kV, 3CX300	160
7	11kV, 3CX150	160
8	1.1kV, 4CX300	110

4. Type Test: Product shall be type tested as per IS 4984, 2016 from any NABL lab. Type test report shall not be older more than 5 years.
5. Acceptance Test: All acceptance test shall be followed as per IS 4984, 2016
6. Embossing as well as ink jet printing: Each pipe shall be embossed and shall be printed with below characters at 1 mtr interval
    - Manufacturer name/Trade mark
    - Customer name
    - Year and month of manufacturing
    - BIS details
    - PO no and date
    - Lot no/Batch no
    - HDPE-dia of pipe, PN6, PE80
    - Length marking
7. Length of pipe: Length of pipe shall be 5 mtr. to 20 mtr as agreed by BSES. Short length may be considered as per IS 4984 or as agreed by BSES.
8. Deviation: Bidder has to intimate to BSES for any kind of deviation and written confirmation shall be taken at evaluation stage. Without any written confirmation on deviation from BSES, it will be assumed that bidder shall comply technical specification fully.
9. Inspection: BSES reserve the right to inspect material at OEM factory. All kind of acceptance as per IS 4984 test shall be conducted by BSES. OEM to intimate inspection call to BSES at 10 days advance of scheduled date.
10. Delivery: MDCC (material dispatch clearance certificate) shall be given after successful completion of final inspection.

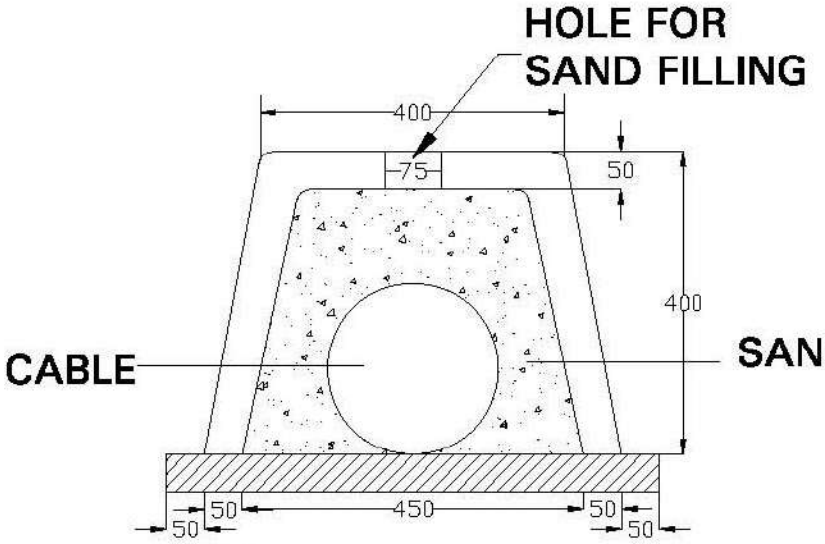
DRAWING OF COFFIN FOR JOINTS



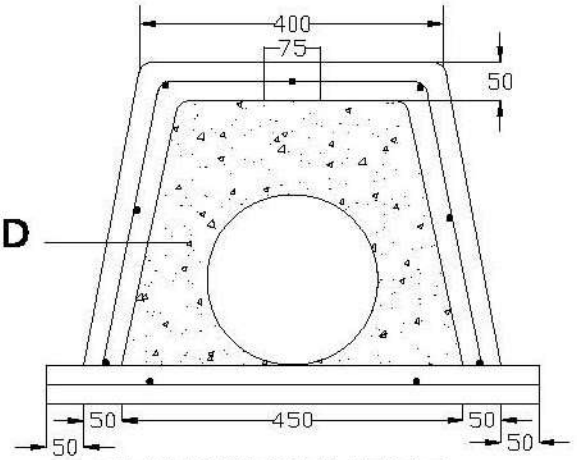
A. PLAN



B. REINFORCEMENT DETAILS 300 MM



D. ELEVATION



E. REINFORCEMENT DETAILS

NOTES :-

1. ALL DIMENSIONS ARE IN MM
2. CONCRETE MIX 1:1.5:3
3. LENGTH OF COFFIN FOR CONSTRUCTIONAL PURPOSE ONLY. ONE COFFIN SHOULD COVER ENTIRE LENGTH OF JOINT

DRAWN	SUMIT
CHECKED	ABHAY
REVIWED	A.T
APPD.	V.P
DATE	30.01.18

TITLE :-

DRAWING OF COFFIN COVER AT CABLE JOINTS

BSES

BSES Rajdhani Power Limited

DRAWING NO.

BSES

Technical Specification of Various Types of Structural Steel Items

Specification no – BSES-TS-17-SSI-R0

Rev:		0
Date:		05 Apr 2022
Pages:		07
Prepared by	Jeena Borana	
	Vani Sood/ Pronab Bairagi	05/04/22 05/04/2022
Reviewed by	Srinivas Gopu	
	Amit Tomar	05/04/2022
Approved by	Gaurav Sharma	
	K. Sheshadri	05/04/22

INDEX

1.0 SCOPE OF SUPPLY

The specification covers design, manufacturing, testing of structural steel items at manufacturers works before dispatch. Packing, delivery of material and submission of documents/test reports to purchaser.

2.0 SERVICE CONDITION

Structural Steel items to be supplied against this specification shall be suitable for satisfactory continuous operation under outdoor environment. Following are the climatic condition:

S. No.	Parameters	Requirements
2.1	Peak ambient temp.	55°C
2.2	Min ambient temp. in shade	45°C
2.3	Max.average ambient temp in 24 hours period in shade	40°C
2.4	Min ambient temp.	(-)5°C
2.5	Max. temp. attainable by an object exposed to sun	70°C
2.6	Max. relative humidity	95%
2.7	Average number of thunder storm days per annum	40
2.8	Average number of rainy storm days per annum	120
2.9	Average annual rainfall	1250mm
2.10	No of months of tropical monsoon condition	4 months
2.11	Max. wind pressure	150kg/m2
2.12	Altitudes	Not exceeding 1000mtrs

3.0 CODES & STANDARDS

S. No.	Code	Description
3.1	2629.1985	Important guidelines for general for general hot-dip galvanizing of iron and steel
3.2	IS 2062	Hot Rolled Medium and High Tensile Structural Steel
3.3	IS 808	Dimension for Hot Rolled Steel Beam, Column, Channel and Angle Section
3.4	IS : 5561-1970	Specification for electric power connection

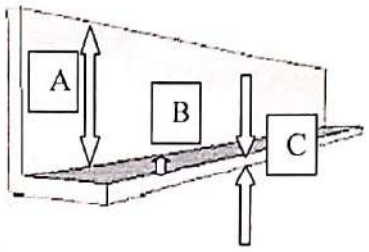
4.0 ELECTRICAL DATA

S.No.	Parameters	Details
4.1	LT Supply System	3 phase AC, 4 Wire
4.2	Rated Voltage	415+/-10%
4.3	Rated Frequency	50Hz ± 5%
4.4	Fault level	35MVA – 50kA

5.0 DESIGN PARAMETERS

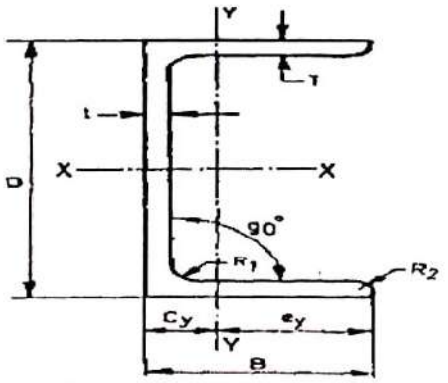
S. No.	Description
5.1	MS Angle, Strctl,50mm , 50mm , 6mm
5.2	MS Angle, Strctl, 65mm , 65mm , 6mm
5.3	MS Angle, Strctl, 75mm , 75mm , 6mm
5.4	CHNL, Strctl, ISMC;150MM;75MM;16.8KG/M
5.5	CHNL, Strctl, ISMC100; 100MM; 50mm; 7.7mm
5.6	Flat, Strctl, 8mm;50mm;6000mm
5.7	Flat, Strctl, 6mm; 50mm;6000mm
5.8	Flat, Strctl, 6mm;50mm;5500mm

5.1 MS Angle (50MM:50MM:6MM): Dimension shall be A =50mm, B=50mm, C=6mm
5.2 MS Angle (65MM:65MM:6MM): Dimension shall be A =65mm, B=65mm, C=6mm
5.3 MS Angle (75MM:75MM:6MM): Dimension shall be A =75mm, B=75mm, C=6mm



For MS Angle reference drawing (a, b & c)

5.4 Channel Structural (150MM;75MM;16.8KG/M): Dimension shall be 150MM;75MM;16.8KG/M
5.5 MS Channel (100MM;100MM;5MMX7.7MM): Dimension shall be D=100, B=100,t=5,T=7.7mm



For MS Channel reference drawing (g & h)

5.6 Flat Structural (8MM;50MM;6000MM) : Dimension shall be 8MM;50MM;6000MM
5.7 Flat Structural (6MM;50MM;6000MM) : Dimension shall be 6MM;50MM;6000MM
5.8 Flat Structural (6MM;50MM;5500MM) : Dimension shall be 6MM;50MM;5500MM

6.0 MATERIAL

6.1	Material	Material shall be mild steel, grade 'A', Designation E-250 as per IS 2062.
6.2	Make	Steel shall be of TATA/SAIL/ESSAR/RINL/JSPL/JSW/VISA steel/Bhushan Steel/Other BSES approved make

7.0 TESTING & INSPECTION

All the tests shall be carried out in accordance with IEC / IS standards.

7.1	Visual Check	Material shall be visually checked and shall free from external defects.
7.2	Dimensional Check	The dimensional requirements shall be checked as per the drawing.

7.3	Acceptance Test	Following tests needs to be conducted by the vendor during inspection (value shall be followed as per relevant IS/IEC) a) Tensile Strength b) Yield Stress c) Elongation d) Chemical Composition as per IS 2062 from NABL accredited LAB. e) Incase of unavailability of inhouse testing facility, tests shall be conducted from NABL accredited LAB.

8.0 MARKING

8.1	The material shall be embossed with the details mentioned	a) Name/Model of the material b) Identification of the source of manufacture c) ISI mark

9.0 DEVIATION

Deviations from this Specification shall be stated in writing with the tender by reference to the Specification clause/GTP/Drawing and a description of the alternative offer. In absence of such a statement, requirements of the Specification shall be met without exception.

10.0 GUARANTEE CERTIFICATE

Guarantee Certificate to be given for any manufacturing defects along with its consignment from the date of receipts at stores for free replacement within one year.

11.0 DOCUMENTS SUBMISSION

Document submission shall be as per the matrix given below. All documents/drawing shall be provided in soft copy for each section. Language of the documents shall be English only. Deficient/improper drawing submission may liable for rejection.

S.No.	Detail of Document	For Tender	For Approval/Review	Final Submission
11.1	Deviation Sheet, if any	Required	Required	Required
11.2	GA and Dimensional	Required	Required	Required

S.No.	Detail of Document	For Tender	For Approval/Review	Final Submission
	Drawing			
11.3	Manufacturer's quality assurance plan and certification for quality standards		Required	Required
11.4	Make of Raw Materials	Required	Required	Required
11.5	Inspection and test reports, carried out in manufacturer's works			Required
11.6	Routine Test Certificates			Required
11.7	Test certificates of all the raw materials			Required

TECHNICAL SPECIFICATION
FOR
LIGHTNING/SURGE ARRESTER
Specification No. SP-LA-64-R0

PREPARED BY	REVIEWED BY	APPROVED BY	REV	0
Minita Kumari	Gaurav Sharma	Devender Sharma	DATE	18/11/2015
Minita	Gaurav		PAGE	Page 1 of 20

CONTENTS

1.0 SCOPE

This specification covers the design, manufacture, assembly, testing at manufacturer's works, packing and delivery of 66kV, 33kV, and 11kV Metal Oxide (gapless) Lightning/Surge arresters with polymeric housing. Scope of supply is given in Annexure A.

2.0 CODES & STANDARDS

The Lightning/Surge arresters shall be designed, manufactured and tested in accordance with the latest applicable Indian Standard, IEC standard, ASTMD standard and CBIP manuals as listed below:

S. No.	Standard Code	Standard Description
2.1		Indian Electricity Rules
2.2		Indian electricity act
2.3		CBIP manual
2.4		ASTMD 2303 standard
2.5	IS : 3070 – Part 3	Lightning Arresters for Alternating Current Systems
2.6	IS : 2071 - Part I	Method of high voltage testing
2.7	IS : 2629 - 1985	Recommended Practice for Hot-Dip Galvanizing of Iron and Steel
2.8	IS : 5621 - 1980	Hollow insulators for use in electrical equipment
2.9	IS : 6639 - 1972	Specification for Hexagon Bolts for Steel Structures
2.10	IEC 60099-4-2001	Metal-Oxide Surge Arresters without gaps for AC Systems
2.11	IEC 60815-3	Polymer Insulators for AC system

3.0 SERVICE CONDITIONS

3.1	Average grade atmosphere	Heavily polluted, dry
3.2	Maximum altitude above sea level	1000
3.3	Ambient air temperature	Highest 50Deg C Average 40Deg C
3.4	Minimum ambient air temperature	0 Deg C

3.5	Relative Humidity	100%
3.6	Seismic Zone	4
3.7	Rainfall	750 mm concentrated in four months

4.0 DESIGN FEATURES

4.1	System	66kV	33kV	11kV
4.1.1	Voltage	66kV ± 10%	33kV ± 10%	11kV ± 10%
4.1.2	Frequency	50Hz ± 5%		
4.1.3	Short circuit rating	31.5kA for 3 sec	26.3kA for 3 sec	26.3kA for 3 sec
4.1.4	Earthing	Solidly grounded		
4.2	Application	To be used for protection of transformers, circuit breakers and other sub-station equipment against lightning and switching surges.		
4.3	Installation	Outdoor for 66kV system, Outdoor/Indoor for 33kV system based on site requirement, and Indoor for 11kV System.		
4.4	Arrestor Type	a. Gap-less metal oxide type (ZnO Type) with absolutely no air volume inside b. Arresters shall be of cage design so that arrester does not explode during the short circuit test condition. The housing should be directly molded on stack of MOV blocks without any intermediate interface.		
4.5	Arrester housing	a. Silicon rubber housing b. The housing material shall be highly hydrophobic in nature. c. Polymer housing shall be free from lamination cavities or other flaws affecting the mechanical and electrical strengths. d. The surge arrester shall not fail due to housing contamination. e. Housing shall be so coordinated that external		

		flashover will not occur due to application of any impulse or switching surge voltage up to maximum design value of surge arrester. The polymer housing should comply with the requirement of IEC 60815-3. f. The housing shall be of Grey colour.
4.6	Connecting lead	Insulated copper cable or copper strip of minimum cross section area 50sq mm with minimum 1.5m length shall be used for connecting LA and surge counter (for outdoor type only)
4.7	Mounting	a. Vertical on steel structures with insulating bases. b. Surge counters shall be suitable for mounting on structure of lightning arrester.
4.8	Line side Terminal Connectors	a. Aluminium alloy terminal clamps Suitable for ACSR Zebra (dia 28.62mm) / Goat conductor (25.97mm) for 66kV/33kV outdoor LA b. 25X3 mm Copper flat for 33kV/11kV Indoor LA
4.9	Ground Terminal Connectors	Suitable for 50x6 mm GI flat
4.10	End fittings	The end fittings used in polymer arrester shall be made out of aluminum through machining process/pressure die-casting process. Sand casted and gravity casted end fittings are not acceptable due to poor microstructure and porosity issues.
4.11	Surge Counter and Leakage current meters	a. The surge counters and leakage current meters shall be provided with 66kV and 33kV outdoor LAs. b. The surge counter shall be Non-resettable type and shall be enclosed in weather proof enclosures. c. Suitable leakage current meters shall be supplied in the surge counter enclosure. d. The reading of milli-ammeter and counter shall be visible through an inspection glass panel to a man standing on ground. e. Paint shade of the enclosure shall be Polyurethane, 692 of IS-5. f. Ingress protection of the enclosure shall be IP-67

4.12	Atmospheric protection for clamp and fitting of iron and steel	All the metal parts including nuts, bolts, and washers shall be Hot dip galvanized as per IS 2633. The minimum thickness of galvanization should be 610g/sqmm.

5.0 NAME PLATE & MARKINGS

5.1	Material	Anodized aluminum 16SWG
5.1.1	Background	SATIN SILVER
5.1.2	Letters, diagram & border	Black
5.1.3	Process	Etching
5.2	Rating plate details	a. Name of the manufacturer b. Type and serial No. c. Rated voltage d. Max. continuous Operating Voltage e. Nominal discharge current f. Pressure Relief Class g. Identification mark on each separately housed unit to enable it to be replaced in correct position after the multiunit arrester has been dismantled. h. Month and year of manufacturer i. BSES PO No. and Date j. Warranty Period

6.0 QUALITY ASSUARANCE PLAN, INSPECTION AND TESTING

S. No.	Description	Requirement / Rating
6.1	Quality Assurance Plan	To be submitted for purchaser approval
6.2	Type test	a. The product must be type tested. Type test reports not older than 5 years carried out from Government recognized / internationally accredited test Labs shall be submitted for the type, size & rating of equipment offered along with bid.

		b. Type test reports of TERT (Tracking & Erosion resistance test) of the housing not older than 5 years carried out from Government recognized/ Internationally accredited test labs as per ASTMD 2303 shall be submitted with the bid.
6.3	Routine test	As per QAP and relevant IS / IEC.
6.4	Acceptance test	As per QAP and relevant IS / IEC.
6.5	Tests on fitting and Accessories	As per Manufacturer's Standards and relevant IS / IEC.
6.6	Inspection and Testing	a. The Buyer reserves the right to inspect the product at the Sellers works at any time prior to dispatch, to verify compliance with the specifications. Inspection hold points shall be as per QAP. b. In-process and final inspection call intimation shall be given in advance to purchaser atleast 15 days in advance.

7.0 DOCUMENTS SUBMISSION

7.1	To be submitted along with bid	The seller has to submit : a. Tentative GA / cross sectional drawing of product showing all the views / sections. b. Assembly drawings and weight of main component parts c. LA mounting arrangement d. Rating Plate diagram e. Terminal clamps detail f. Detailed reference list of customers already using the offered product during the last 5 years with similar design and rating. g. Completely filled GTP h. Detailed calculation of 'energy discharge capability'. i. Deviations from this specification. Only deviations

		approved in writing before award of contract shall be accepted. j. Details of manufacturer's quality assurance standards and programme and ISO 9000 series or equivalent national certification. k. Type test reports shall be submitted for the type, size & rating of product / equipment offered along with bid. They shall be considered valid for 5 years from date of test performed on product / equipment. l. Complete product Manual along with the bid. m. Recommended spare parts and consumable items for five years of operation with prices and spare parts catalogue with price list for future requirements n. Bill of material with make, model & quantity of items.
7.2	To be submitted after award of contract	a. Program for production and testing b. Guaranteed Technical Particulars c. Calculations to substantiate choice of electrical, structural, mechanical component size / ratings d. Detailed dimension drawing for all components, general arrangement drawing showing detailed component layout e. Rating and diagram plate f. Detailed loading drawing to enable the buyer to design and construct foundations (as applicable) g. Transport / Shipping dimensions with weights h. Detailed Bill of Materials for all fittings and accessories with their make, model & tag no. etc i. Detailed installation and commissioning instructions j. Quality plan
7.3	Submittals required prior to dispatch	a. Inspection and test reports, carried out in manufacturer's works (R) b. Test certificates of all bought out items c. Operation and maintenance Instruction as well as trouble shooting charts/ manuals

7.4	Drawing and document sizes	Standard size paper A0, A1, A2, A3, A4

8.0 PROGRESS REPORTING

8.1	Outline Document	To be submitted for purchase approval for outline of production, inspection, testing, inspection, packing, dispatch, documentation programme.
8.2	Detailed Progress Report	To be submitted to purchaser once a month containing a. Progress on material procurement b. Progress on fabrication (As applicable) c. Progress on assemble (As applicable) d. Progress on internal stage inspection e. Reason for any delay in total programme f. Details of test failures if any in manufacturing stages g. Progress on final box up constraints / forward path

9.0 PACKING, SHIPPING, HANDLING & SITE SUPPORT

9.1	Packing Protection	The packing shall be fit to withstand rough handling during transit and storage at destination. The test set should be properly protected against corrosion, dampness & damage.
9.2	Packing for accessories and spares	Robust non-returnable packing case with all the above protection & identification Label. The bidder should get the packing list approved before dispatching the material.
9.3	Packing Identification Label	On each packing case, following details are required:
9.3.1	Individual serial number	
9.3.2	Purchaser's name	
9.3.3	PO number (along with SAP item code, if any) & date	
9.3.4	Equipment Tag no. (if any)	
9.3.5	Destination	
9.3.6	Manufacturer / Supplier's name	

9.3.7	Address of Manufacturer / Supplier / it's agent	
9.3.8	Description	
9.3.9	Country of origin	
9.3.10	Month & year of Manufacturing	
9.3.11	Case measurements	
9.3.12	Gross and net weight	
9.3.13	All necessary slinging and stacking instructions	
9.4	Shipping	The seller shall be responsible for all transit damage due to improper packing.
9.5	Handling and Storage	Manufacturer instruction shall be followed. Detail handling & storage instruction sheet / manual to be furnished before commencement of supply.

10.0 DEVIATIONS

10.1	Deviation	Deviations from this Specification shall be stated in writing with the tender by reference to the Specification clause/GTP/Drawing and a description of the alternative offer. In absence of such a statement, it will be assumed that the bidder complies fully with this specification. No deviation will be acceptable post order.

ANNEXURE A : SCOPE OF SUPPLY

S. No.	Description	Descriptive requirement
1	Main Equipment	Polymeric type Lightning/Surge Arresters of 66/33/11 kV
2	Accessories	a. Line terminal connectors
		b. Surge counter with leakage current ammeter (For outdoor only)
		c. Grounding terminal bracket
		d. Necessary flanges along with all hot dip galvanized hardware such as nut bolts/ washers etc. for mounting of LA & surge Counter
		e. Suitably sized Cu flat or insulated copper cable for connection between LA and surge counter
		f. Any other item necessary or usual for efficient performance and satisfactory maintenance under the various operating and atmospheric conditions
3	Documentation	Submission of all drawings & documents pertaining to the equipment.

ANNEXURE B: Guaranteed Tech. Particulars for 66KV Lightning Arrester

Sr. No.	Description	BSES Requirement	Data by Supplier
1	Name of manufacturer		
2	Type	Gapless, ZnO type, single pole, heavy duty, station class, pedestal mounted	
3	Model		
4	No. of units.		
5	Installation	Outdoor	
6	Application	Protection of Transformers, circuit breakers, lines and other outdoor S/S equipment.	

7	LA connection to system	Phase to earth	
8	Type of Conductor	ACSR Zebra / Goat	
9	Construction	Single Phase	
10	Rated voltage of arrester (KVrms)	60 KV	
11	Nominal discharge current (Amps) (8/20 micro sec. wave) peak value	10KA	
12	System Particulars		
i)	Highest System Voltage	72.5 KV	
ii)	Frequency	50HZ ± 5%	
iii)	System neutral	Solidly earthed	
iv)	Max. value of temporary over voltage & its max. duration		
	- Insulation level of equipment to be protected	325 KVp	
	- System short circuit level	31.5KA for 3 seconds.	
13	Maximum continuous operating voltage (MCOV)	52KV	
14	Impulse withstand current	100KAp	
15	Long Duration discharge class	3	
16	Minimum single impulse energy capability	Min 6kJ/kV	
17	Maximum residual voltage at switching impulse current of 1KAp (30/60 micro sec. wave)	136 KVp	
18	Max. residual voltage for discharge current (8/20 micro sec)		
i)	At 05 KAp		
ii)	At 10 KAp		
iii)	At 20 KAp		
19	Minimum creepage distance	25 mm/KV	
20	Pressure relief class	40KA	
21	Leakage current at COV (mA)		
i)	Resistive		

ii)	Capacitive		
22	Dry and wet power frequency withstand voltage of arrester insulation (KVrms)		
23	Virtual steepness for front of wave for above (KV/micro sec.)		
24	Ratio of system voltage withstand level to protection level of surge arrester		
25	High current impulse withstand 4/10 micro second peak value (KA)		
26	Long duration current Impulse		
i)	Current peak. (Amps)		
ii)	Virtual duration (micro sec)		
27	Temporary Over Voltage Capacity (KVp)		
i)	At 0.1 Sec.		
ii)	At 1.0 Sec.		
iii)	At 10.0 Sec.		
iv)	At 100.0 Sec.		
28	Weight of complete unit (Kg)		
29	Height of complete unit from base to the line side (mm)		
30	Minimum recommended spacing between arresters Centre to Centre (mm)		
31	Clearance required from ground equipment at various heights of arresters unit (mm)		
32	Earthing arrangement provided for earthing side of arresters.		
33	Mounting flanges dimensional details.		

34	Type and specifications of the surge connecters.	As per specs	
35	Surge Counter		
i)	Make		
ii)	Model no.		
iii)	Type	Non resettable type	
iv)	Surge counter min. current for recording a lightning stroke	200 Amp	
v)	Surge counter max. disch. Current withstand	100KA peak for 4/10 wave shape.	
vi)	Counter operation	One count per surge	
vii)	Paint shade of surge counter housing	Polyurethane, 692 of IS-5	
viii)	Degree of protection of the surge counter	IP-67	
36	Mili-ampere meter	To be provided	
i)	Type and range of milli-ampere meter.		
ii)	Range of continuous leakage current at rated voltage with variation due to change in temperature & frequency		
iii)	Safe leakage current (mA) , and its indication		
iv)	Indication of deterioration of surge arrester		
37	Size and length of flexible Cu cable for connection between LA & surge counter	Min 50sqmm size, min 1.5m length	
38	Voltage time curve for thermal stability of LA after a stroke	To be provided	
39	Housing of LA	Silicon rubber	
i)	Type	Silicon rubber	
ii)	Colour	Grey	
40	Supporting Insulators	FRP rods	
41	Life expectancy of LA		

ANNEXURE C: Guaranteed Tech. Particulars for 33KV Lightning Arrester

Sr. No.	Description	Data By Purchaser	Data by Supplier
1	Name of manufacturer		
2	Type	Gapless, ZnO type, single pole, heavy duty, station class, pedestal mounted	
3	Model		
4	No. of units.		
5	Installation	Outdoor / Indoor	
6	Application	Protection of Transformers, circuit breakers, lines and other outdoor S/S equipment.	
7	LA connection to system	Phase to earth	
8	Type of Conductor	ACSR Zebra / Goat	
9	Construction	Single Phase	
10	Rated voltage of arrester (KVrms)	30 KV	
11	Nominal discharge current (Amps) (8/20 micro sec. wave) peak value)	10KA	
12	System Particulars		
i)	Highest System Voltage	36 KV	
ii)	Frequency	50HZ ± 5%	
iii)	System neutral	Solidly earthed	
iv)	Max. value of temporary over voltage & its max. duration		
	- Insulation level of equipment to be protected	170 KVp	
	- System short circuit level	26.3KA for 3 seconds.	
13	Maximum continuous operating voltage (MCOV)	25KV	
14	Impulse withstand current	100KAp	
15	Long Duration discharge class	3	
16	Minimum single impulse energy capability	Min 6kJ/kV	

17	Maximum residual voltage at switching impulse current of 1KAp (30/60 micro sec. wave)	70KVp	
18	Max. residual voltage for discharge current (8/20 micro sec)		
i)	At 05 KAp		
ii)	At 10 KAp		
iii)	At 20 KAp		
19	Minimum creepage distance	25 mm/KV	
20	Pressure relief class	40KA	
21	Leakage current at COV (mA)		
i)	Resistive		
ii)	Capacitive		
22	Dry and wet power frequency withstand voltage of arrester insulation (KVrms)		
23	Virtual steepness for front of wave for above (KV/micro sec.)		
24	Ratio of system voltage withstand level to protection level of surge arrester		
25	High current impulse withstand 4/10 micro second peak value (KA)		
26	Long duration current Impulse		
i)	Current peak. (Amps)		
ii)	Virtual duration (micro sec)		
27	Temporary Over Voltage Capacity (KVp)		
i)	At 0.1 Sec.		
ii)	At 1.0 Sec.		
iii)	At 10.0 Sec.		
iv)	At 100.0 Sec.		

28	Weight of complete unit (Kg)		
29	Height of complete unit from base to the line side (mm)		
30	Minimum recommended spacing between arresters Centre to Centre (mm)		
31	Clearance required from ground equipment at various heights of arresters unit (mm)		
32	Earthing arrangement provided for earthing side of arresters.		
33	Mounting flanges dimensional details.		
34	Type and specifications of the surge connecters.	As per specs	
35	Surge Counter for outdoor type		
i)	Make		
ii)	Model no.		
iii)	Type	Non resettable type	
iv)	Surge counter min. current for recording a lightning stroke	200 Amp	
v)	Surge counter max. disch. Current withstand	100KA peak for 4/10 wave shape.	
vi)	Counter operation	One count per surge	
vii)	Paint shade of surge counter housing	Polyurethane, 692 of IS-5	
viii)	Degree of protection of the surge counter	IP-67	
36	Mili-ampere meter for outdoor type		
i)	Type and range of milli-ampere meter.		
ii)	Range of continuous leakage current at rated voltage with variation due to change in temperature & frequency		
iii)	Safe leakage current (mA) , and its indication		

iv)	Indication of deterioration of surge arrester		
37	Size and length of flexible Cu cable for connection between LA & surge counter	Min 50sqmm size, min 1.5m length	
38	Voltage time curve for thermal stability of LA after a stroke	To be provided	
39	Housing of LA		
i)	Type	Silicon rubber	
ii)	Colour	Grey	
40	Supporting Insulators	FRP rods	
41	Life expectancy of LA		

ANNEXURE D: Guaranteed Technical Particulars for 11KV Surge Arrester

Sr. No.	Description	Data By Purchaser	Data by Supplier
1	Name of manufacturer		
2	Type	Gapless, ZnO type, single pole, heavy duty, station class, pedestal mounted	
3	Model		
4	No. of units.		
5	Installation	Indoor	
6	Application	Protection of Transformers, circuit breakers, lines and other outdoor S/S equipment.	
7	LA connection to system	Phase to earth	
8	Type of Conductor	Copper flat	
9	Construction	Single Phase	
10	Rated voltage of arrester (KVrms)	9 KV	
11	Nominal discharge current (Amps)	10KA	
12	System Particulars		
i)	Highest System Voltage	12 KV	
ii)	Frequency	50HZ ± 5%	
iii)	System neutral	Solidly earthed	

iv)	Max. value of temporary over voltage & its max. duration		
	- Insulation level of equipment to be protected	75 KVp	
	- System short circuit level	26.3kA for 3 seconds.	
13	Maximum continuous operating voltage (MCOV)	7.65 KV	
14	Impulse withstand current	100KAp	
15	Long Duration discharge class	2	
16	Minimum single impulse energy capability	Min 2.5kJ/kV	
17	Maximum residual voltage at switching impulse current of 1KAp (30/60 micro sec. wave)		
18	Max. residual voltage for discharge current (8/20 micro sec)		
i)	At 05 KAp		
ii)	At 10 KAp		
iii)	At 20 KAp		
19	Minimum creepage distance	25 mm/KV	
20	Pressure relief class	40KA	
21	Leakage current at COV (mA)		
i)	Resistive		
ii)	Capacitive		
22	Dry and wet power frequency withstand voltage of arrester insulation (KV rms)		
23	Virtual steepness for front of wave for above (KV/micro sec.)		
24	Ratio of system voltage withstand level to protection level of surge arrester		

25	High current impulse withstand 4/10 micro second peak value (KA)		
26	Long duration current Impulse		
i)	Current peak. (Amps)		
ii)	Virtual duration (micro sec)		
27	Temporary Over Voltage Capacity (KVp)		
i)	At 0.1 Sec.		
ii)	At 1.0 Sec.		
iii)	At 10.0 Sec.		
iv)	At 100.0 Sec.		
28	Weight of complete unit (Kg)		
29	Height of complete unit from base to the line side (mm)		
30	Minimum recommended spacing between arresters Centre to Centre (mm)		
31	Clearance required from ground equipment at various heights of arresters unit (mm)		
32	Earthing arrangement provided for earthing side of arresters.		
33	Mounting flanges dimensional details.		
34	Voltage time curve for thermal stability of SA after a stroke	To be provided	
35	Housing of SA		
i)	Type	Silicon rubber	
ii)	Colour	Grey	
36	Supporting Insulators	FRP rods	
37	Life expectancy of SA		

BSES

Technical Specification

For

Grounding and Lightening Protection System

Specification no – BSES-TS-76-GES-R0

Rev		0
Date		06 May 2022
Prepared by	Bhanu Gehlot	
	Uttam Shukla	
Reviewed by	Abhinav Srivastava	
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INDEX TABLE

1. SCOPE

This specification covers the guidelines of earthing & lightening protection at 66/11, 33/11, 66/33/11 kV Grid substation and the technical requirements of material required for earthing system.

2. STANDARDS & CODES

2.1.	CEA guidelines	Technical standards for construction of electrical plants and electrical lines
2.2.		IE Rules of 1956
2.3.	IEEE Std 80	IEEE guide for safety in AC substation grounding
2.4.	CBIP :2006 – publication no. 229	Manual on substation layout
2.5.	IS 3043: 1987	Code of practice for earthing
2.6.	IS 2629 (1985)	Recommended practice for hot dip galvanizing of Iron & Steel
2.7.	IS 2633 (1986)	Method for testing uniformity of coating on zinc coated article
2.8.	IS 5358 (1969)	Specification for hot dip galvanized coating on fasteners
2.9.	IS 4759 (1996)	Specification of Hot dip zinc coatings on structural steel and other allied products
2.10.	IS 1239 (2004)	Steel tubes, tubular and other wrought steel fittings- specification
2.11.	IEC 62561-2	Requirements for conductors and earth electrodes
2.12.	IEC 62561-7	Requirements for earthing enhancing compounds
2.13.	UL 467	Standard for safety - Grounding and bonding equipment
2.14.		Handbook on Electrical Earthing (Ministry of Railways)

3. REQUIREMENT OF EARTHING

3.1.	Primary guidelines	Following are primary guidelines for a good earthing system in a Grid substation: a. The impedance to ground should be as low as possible. In general it should not exceed **0.5ohm**. b. The step and touch potentials shall be within safe limits. c. The contractor shall do the calculation for number of earthing rods being used in a substation for achieving the desired earth resistance.

3.2.	Design Parameters	Earthing Calculation parameters shall be taken as: 1) Duration of shock current ts=1sec. 2) Top Gravel resistivity shall be 3000 Ohm Meter. 3) Split/ Diversion Factor shall be considered as 1 4) Earth conductor/ electrodes size calculation based upon corrosion considered for next 40 years. 5) The final diameter of earth conductors/rod shall be maximum of calculated dia or 25 mm (prescribed in clause 5)
3.3.	Earthing lead size	a. The actual size of earthing lead will depend on the maximum fault current which the earthing lead will be required to carry safely. b. Please refer **AnnexureA1** for HT fault level.
3.4.	Earthing type	a. Rod earthing shall be provided for the Grid substation. b. The size of the rod depends upon the current to be carried and the type of the soil. Soil resistivity testing will be carried out by vendor. c. The Earth Electrode should be embedded vertically. Wherever hard rock is encountered, the rod can be inclined at an angle of about 30deg to the horizontal as per clause 9.2.2 of IS 3043. d. The vertically driven rods shall be interconnected with each other using horizontal grid conductors.
3.5.	Earth Pit	a. As per clause 20.5.2 of IS 3043, the minimum distance between the vertical earth electrodesshall not be less thanthe length of rod. b. Minimum of 1m distance of earth pit from electrical equipment and structures shall be maintained. c. The earth pits shall be backfilled with earth enhancing material as per Drawing . d. Treated Earth pits shall be used where earth resistance value is getting over the prescribed value in specification i.e. 0.5 ohms. e. Treated Pipe earthing required for 2 nos. each for PTR & Station TRF neutral and RTU/ SCADA. f. 50% quantity of the total earth electrodes to be provided with earth enhancing material (Terec++/ marconite).
3.6.	Horizontal Conductor	a. The entire earth rod driven in ground vertically shall be interconnected with earth grid conductors horizontally under the ground. b. The Horizontal conductors shall be laid 600mm below FGL. c. Minimum earth coverage of 300 mm shall be provided between the Horizontal conductor and the bottom of trench/foundation/underground pipe at the crossing. d. Horizontal conductors around a building /switchyard fence shall be buried outside the boundary at a minimum distance of 2000 mm. e. Risers shall be provided 300mm above the ground level for equipment earthing. Two number treated earth pits shall be provided with riser for connection of transformer neutral. f. All the joints between rods flats shall be **exothermic** type for creating better electrical contact between two. Welding between rods to flat, flat to flat should be arc welding type. g. Wherever bolted connection is done, it shall be done through two bolts at each joint to ensure tightness and avoid loosening with passage of time. h. Where a 66 kV overhead line terminates at the substation, a

		metallic continuity between the end tower and the substation earth grid should be established with two independent connections. i. To ensure good welding, it should be carried out only after scratching off the galvanization, dirt, grease etc by thorough cleaning of contact surface. After welding it will be made with anticorrosive zinc rich paint.
3.7.	Equipment earthing	a. GI strips shall be used for the equipment earthing. b. Two separate and distinct earth connections shall be provided for earthing of electrical frameworks. c. The connection of GI strip with riser of earth mat shall be electric arc welding arrangement;connection ofequipment with earthing end shall be double bolted arrangement. d. The transformer neutral shall be earthed with two independent grounding conductors connected to two separate earth pits. e. Fence within the earth grid shall be bonded to the plant earth system at regular interval not exceeding 10 meters. Fence gate shall be separately earthed with flexible Copper braid to permit movement. f. Bolted connection shall be made only for earthing of equipment/devices and for some removable structures. The contact surfaces shall be thoroughly cleaned before connection to ensure good electrical contact. g. Cable armor shall be earthed at both ends for multi core cables. For single core cables, the earthing shall be at switchgear end only. h. For prefabricated cable trays, a separate ground conductor shall run along the entire length of cable tray and shall be suitably clamped on each cable tray at periodic intervals. Each continuous laid out lengths of cable tray shall be earthed at minimum two places by GS flats to Owner's earthing system, the distance between earthing points shall not exceed 30 metre. Wherever earthmat is not available Contractor shall do the necessary connections by driving an earth electrode in the ground. i. Earthing conductor's crossings the road shall be installed at 1000 mm depth and where adequate earth coverage is not provided it shall be installed in Hume pipes. Earthing conductors embedded in the concrete floor of the building shall have approximately 50mm concrete cover. j. Metallic stairs and hand rails shall be earthed as for columns. Additionally a 25x6 GI flat shall run the entire length of the stairs. The GI flat shall be welded to the stairs and hand rails at intervals of 1500 mm. k. The main earth conductor shall be securely fixed to the columns /walls/trays by welding /clamping at the intervals not exceeding 1500 mm. The earth conductors shall be interconnected between them and to the main earth grid through risers. l. **In case of GIS substation, earthing rods to be considered in RCC floor as per GIS OEM recommendation.**
3.8.	Lightening protection	a. Direct stroke lightning protection (DSLP) shall be provided in the EHV switchyard by shield wires/ High mast spike gaurd. The final arrangement shall be decided after approval of the DSLP calculations. The Contractor is required to carry out the DSLP

		calculations and submit the same to the Owner for approval of the same at detailed engineering stage after award of contract. b. DSLP protection shall be provided for control room building as per design calculation following Indian standards. The down conductor should be high conductivity bare copper tape with minimum size of 75 sqmm. c. Connection between each down conductor & Test link shall be located approximately 2000mm above ground Level. d. Separate earth electrodes shall be provided for building DSLP connecting the down conductors to the risers & finally to the Earthmesh. Minimum electrodes to be provided – 4 Nos.

4. SPECIFICATION OF EARTHING MATERIALS

4.1.	GI earthing strip	a. Fully galvanized iron strips shall be used conforming to IS 2629. b. The zinc deposition shall not be less than 610gm/sqm of the galvanized surface area of the MS Earthing strips. c. The zinc coating used for the galvanization shall be of 9.99 % purity grade as per IS 209. d. All the galvanized material shall be checked for uniformity and weight as per IS. e. The standard length of galvanized iron earthing strip shall be minimum 7Mtrs.
4.2.	Vertical and Horizontal Earth Electrode	a. Copper clad steel rod driven in the earth vertically shall be a high tensile-low carbon steel rod of adequate diameter(as per the clause 6.0 of the specs) and 3m length complying UL467, IEC62561-2 and IS 3043, molecularly bonded by 99.99% pure high conductivity copper on the outer surface with copper coating thickness 254 microns or more with sufficient amount of earth enhancement compound as per IEC 62561-7. b. Copper bonding must be UL/CPRI/ERDA certified. c. Rod shall be tested and certified from CPRI/ERDA for a short circuit current withstanding of desired value. d. There shall be following marking on the rod-Dimension Detail, product model no, Reference number of certification. e. It shall have high corrosion resistance and shall eliminate electrolytic action. f. The rod shall have thread profile at both the ends to ensure no copper is removed from the steel.

5. SIZES OF THE EARTHING MATERIALSFOR EQUIPMENT EARTHING

S.No.	Title	Material	Sizes of the earthing	Type	UOM	No of Lead
	Main Earthing Grid					
5.1	Vertical Rods	Cu Bonded Rods	25	Rod	mm (dia)	
5.2	Above Ground risers	GI	50x10	Flat	Sqmm	2
5.3	Horizontal Rods	Cu Bonded Rods	25	Rod	mm (dia)	
5.4	Treated Earth Pit	Cu Bonded Rods	25	Rod	mm (dia)	
	Power Transformers					
5.5	Frame	GI	75X10	Flat	Sqmm	2
5.6	Marshalling Box	GI	50X6	Flat	Sqmm	2
5.7	Radiator	GI	50X6	Flat	Sqmm	2
5.8	Neutral	GI	75X10	Flat	Sqmm	2
5.9	Fan	GI		As per sizes mentioned for fans		
	11 KV System					
5.10	11 KV Swithcgear	GI	50X6	Flat	Sqmm	2
5.11	11 KV Bus Duct	GI	50X6	Flat	Sqmm	2
5.12	11 KV Cable Box	GI	50X6	Flat	Sqmm	2
	415 V System					
5.13	ACDB	GI	50X6	Flat	Sqmm	2
5.14	Station Trafo Frame	GI	50X6	Flat	Sqmm	2
	DC System					
5.15	Battery Charger	GI	50X6	Flat	Sqmm	2
5.16	DCDB	GI	50X6	Flat	Sqmm	2

	Other Electrical Items					
5.17	Three phase receptacles, welding outlet	GI	25x3	Flat	Sqmm	1
5.18	C&R Panel	GI	50X6	Flat	Sqmm	2
5.19	Push Button	GI	8	Wire	Swg	1
5.20	Cable Trays(one run along the tray section)	GI	50X6	Flat	Sqmm	1
	Other Non Electrical Items					
5.21	Railway Tracks	GI	25x6	Flat	Sqmm	At suitable Points
5.22	Metallic noncurrent carrying structures like stair case	GI	25x6	Flat	Sqmm	1
5.23	Columns, Structures	GI	50X6	Flat	Sqmm	2
5.24	Steel pipe racks	GI	25x6	Flat	Sqmm	1
5.25	Fence/Gate	GI	50X6	Flat	Sqmm	As per clause 3.7 (e)
5.26	Hand Rail	GI	8	Wire	Swg	1

6. TESTING AND INSPECTION

6.1.	Earthing materials	a. The purchaser reserves the right to inspect the material at the time of tests. All tests shall be performed in the presence of BYPL/BRPL representative. The bidder shall give intimation in advance to witness the test. b. Acceptance test for GI earthing strips – Tests for Visual examination, dimensional verification and galvanization shall be witnessed at the time of inspection. c. Acceptance test of Earth enhancement compound – Tests for leaching, sulphur determination, corrosion and resistivity shall be done as per IEC 62561-7 d. Type test reports of the earthing materials from CPRI/ERDA/Equivalent lab shall be submitted. The bidder shall submit UL-467/CPRI/ERDA test reports for copper clad steel rod.

6.2.	Measurement of Earth resistance	a. After the completion of work ground resistance of each installation shall be measured by BYPL/BRPL/Contractor. b. The measurement of resistance shall be witnessed and signed by representative of BYPL/BRPL as well as the contractor. The test certificates shall be generated for each installation clearly indicating the details of the transformer, name of the substation, location, district, serial no. of testing equipment and name of testing engineer. c. The desire ground resistance shall be measured after interconnection of earth pits is completed. The value of earth resistance shall not be more than **0.5 ohm**. d. In case where this value exceeds 0.5 ohms, the earthing design shall be redesigned. The pit location, earth electrode, soil treatment, earth conductor, GI strip used shall be checked whether properly used at site. If not, these shall be changed as per the redesigned plan.

7. DEVIATIONS

7.1.	Deviation	Deviations from this Specification shall be stated in writing with the tender by reference to the Specification clause/GTP/Drawing and a description of the alternative offer. In absence of such a statement, it will be assumed that the bidder complies fully with this specification. No deviation will be acceptable post order.

8. DOCUMENTS SUBMISSION

The bidder has to submit the following documents along with bid:-

8.1.	Complete earthing calculation
8.2.	Complete product catalogue, Manual and calibration certificate of the equipment
8.3.	Type test reports
8.4.	Deviation Sheet (if any)

9. GUARANTEED TECHNICAL PARTICULARS

S. No	Parameter	BYPL/BRPL Requirement	Vendor Data
9.1	Rod to rod welding	Exothermic	
9.2	Zinc deposition of GI earthing Strip	610gm/sqm	
9.3	Length of GI Strip	7m (Minimum)	

9.4	Diameter of Cu clad Rod	25 mm or calculated Dia whichever is higher	
9.5	UL/CPRI/ERDA Certification of Cu Bonding	Test certificate to be provided	
9.6	Cu bonding	250 Micron	
9.7	Length of Copper bonded rod	3 m	
9.8	Purity of Copper	99.99%	
9.9	Short circuit withstand test of Rod	31.5kA	
9.10	Marking on the rod-Dimension Detail, product model no, Reference number of certification	Sample Required	
9.11	ROHS Certificate from NABL accredited lab for not having toxic chemical in earth enhance material	Test certificate to be provided	
9.12	Resistivity of earth enhancing material	0.12 ohm-m(Max)	
9.13	Exothermic welding material	IEEE 837 Complied	
9.14	Make of Steel	SAIL/ESSAR/TATA	

ANNEXURE A1 : REFERENCE FAULT LEVEL

Voltage Level(kV)	Design Fault Level
66/11	31.5 KA
33/11	25 KA

Chapter-6b Technical Specification for Lightning Arrestor

1.0 CODES & STANDARDS:

Materials, equipment and methods used in the manufacturing of Lightning Arresters shall confirm the latest edition of following standard: -

National Standard

Standard Code	Standard Description
	Indian Electricity Rules (relevant safety regulation of CEA)
	Indian Electricity Act 2003
	CBIP manual
IS: 3070 Part-3	Lightning Arresters for Alternating Current Systems
IS : 2071 - Part I	Method of high voltage testing
IS : 2629 -1985	Recommended practice for Hot-Dip Galvanizing of Iron and Steel
IS : 5621 – 1980	Hollow insulators for use in electrical equipment
IS : 6639 - 1972	Specification for Hexagon bolts for Steel structures

International Standard

Standard Code	Standard Description
IEC 60099-4-2001	Metal-Oxide surge arresters without gaps for AC system

2.0 DESIGN FEATURES

S No	Description	Requirement / Rating
2.1	Application	To be used for protection of transformers, circuit breakers and other sub-station equipment against lightning and switching surges.
2.2	Type of Lightning Arrester	Gap-less metal oxide type (ZnO type)
2.3	Pressure relief device	Pressure relief device of class 40 KA shall be provided
2.4	Accessories	Clamps and counter
2.5	Mounting	LA mounting vertically on steel structures with insulating bases. Surge counters in weather proof enclosures suitable for mounting on structure of lighting arrester
2.6	Line-side Terminal Connectors	Suitable for ACSR Zebra/ Goat conductor / Pipe Bus
2.7	Ground Terminal Connectors	Suitable for 50x6 mm GS flat
2.8	Surge Counter	Non – resettable type

Chapter-6b Technical Specification for Lightning Arrestor

2.9	Name Plate Marking	Following minimum information must be marked – i) Name of the manufacturer ii) Type and serial No. iii) Model No. iv) Rated voltage v) Max. continuous Operating Voltage vi) Nominal discharge current vii) Pr. Relief Current viii) Identification mark on each separately housed unit to enable it to be replaced in correct position after the multiunit arrester has been dismantled.
3.0	**Approved make of Components**	
3.1	Insulators	JS / WSI / BHEL / Modern / Saravana
4.0	**Testing & Inspection**	
4.1	Internal Test	Manufacturer shall carry out comprehensive inspection and testing during manufacturing of the equipment.
4.2	Type test	The product must be of type tested quality. Type test reports shall be submitted for the type, size & rating of equipment offered along with bid. If the manufacturer's lab is accredited by Govt./ authorized body then it shall be acceptable for type testing
4.3	Routine test	As per relevant IS / IEC
4.4	Acceptance test	as per relevant IS / IEC
4.5	Test Witness	
		The buyer reserves the right to witness all tests specified on completed product
		The buyer reserve the right to inspect the product at the sellers works at any time prior to dispatch, to verify compliance with the specifications.
		In-progress and final inspection call intimation shall be given in advance to Owner.
4.6	Tests on Fitting and Accessories	As per manufacturer's standard and relevant IS / IEC

3.0 DEVIATIONS

Deviation from this specification, if any, shall be clearly brought out in the offer. Unless owner explicitly accepts such deviations, it shall be considered that the offer fully complies with the specification.