

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

NOIDA METRO RAIL CORPORATION (NMRC) LIMITED

REQUEST FOR PROPOSAL (RFP)

E tender No. NMRC/Servo/EL-223/2023/247

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Feb 2023

Issued by:

**Noida Metro Rail Corporation (NMRC) Limited
Block-III, 3rd Floor,
Ganga Shopping Complex, Sector-29, Noida -201301,
District Gautam Budh Nagar, Uttar Pradesh, India**

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Disclaimer

This Request for Proposal (RFP) Document (or “E-Tender” or “E-Bid”) for **“Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.”** contains brief information about the scope of work and selection process for the Bidder (“the Contractor” or “the Bidder”). The purpose of the Document is to provide the Bidders with information to assist the formulation of their Bidding Documents.

While all efforts have been made to ensure the accuracy of information contained in this RFP Document, this Document does not purport to contain all the information required by the Bidders. The Bidders should conduct their own independent assessment, investigations and analysis and should check the reliability, accuracy and completeness of the information at their end and obtain independent advice from relevant sources as required before submission of their Bid/s. Noida Metro Rail Corporation Ltd. (“NMRC” or “the Corporation” or “the Employer”) or any of its employees or advisors shall incur no liability under any law, statute, rules or regulations as to the accuracy or completeness of the RFP Document.

NMRC reserves the right to change any or all conditions/information set in this RFP Document by way of revision, deletion, updating or annulment through issuance of appropriate addendum as NMRC may deem fit without assigning any reason thereof.

NMRC reserves the right to accept or reject any or all Bids without giving any reasons thereof. NMRC will not entertain or be liable for any claim for costs and expenses in relation to the preparation of the Bid/s to be submitted in terms of this RFP Document.

Glossary

- a) **“Addendum / Amendment”** means any written amendment / addendum /corrigendum to this RFP, from time to time issued by NMRC to the prospective bidders
- b) **“Agreement”** means the Contract Agreement to be executed between NMRC and the Selected Bidder
- c) **“Applicable Laws”** means all the laws including local, state, national or other laws, brought into force and effect by Govt. of India, State Governments, local bodies, statutory agencies and any other, and rules / regulations / notifications issued by them from time to time. It also includes judgments, decrees, injunctions, writs and orders of any court or judicial authority as may be in force and effected from time to time
- d) **“Bidder”** or **“Bidder”** means any entity which is a sole proprietorship firm, a partnership firm or a company, in title and assigns which is submitting its bid pursuant to RFP Documents
- e) **“Bid Due Date”** means Bid Submission end date and time given in the E-tender
- f) **“Earnest Money Deposit (EMD)”** means the refundable amount to be submitted by the Bidder along with RFP documents to NMRC
- g) **“NMRC”** means Noida Metro Rail Corporation Limited (or “Corporation” or “Employer”)
- h) **“Party”** means Contractor or Corporation (together they are called **“Parties”**)
- i) **“Performance Bank Guarantee/ Security Deposit”** means interest free amount to be deposited by the Contractor with NMRC as per terms and conditions of Contract Agreement as a security against the performance of the Contract agreement
- j) **“Permits”** shall mean and include all applicable statutory, environmental or regulatory Contracts, authorization, permits, consents, approvals, registrations and franchises from concerned authorities
- k) **“Re. or Rs. or INR”** means Indian Rupee
- l) **“Revenue Operations Date (ROD)”** means the date of operation of Metro
- m) **“Selected Bidder”** means the bidder who has been selected by NMRC, pursuant to the bidding process for award of Contract

The words and expressions beginning with capital letters and defined in this document shall, unless repugnant to the context, have the meaning ascribed thereto hereinabove.

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Data Sheet

1	Name of the Bid	Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.
2	Approximate Cost of Work	Rs. 24,82,874.00 (Rupees Twenty Four Lakh eighty two thousand eight Hundred seventy four only) (including GST)
3	Time-period of contract	Two Months
4	Method of selection	Cost Based Selection (Lowest -L1)
5	Bid Processing Fee	INR 5900 (including GST) (Rupees Five Thousand Nine Hundred only) through RTGS/NEFT only payable in favour of Noida Metro Rail Corporation Limited
6	Ernest Money Deposit (EMD)	INR 49,900 /- (Rupees Forty Nine Thousand Nine Hundred only)
	Tender Cost and EMD	Exempted for Micro & Small Enterprises of mentioned category
7	Financial Bid to be submitted together with Technical Bid	Yes
8	Name of the Corporation's official for addressing queries and clarifications	DGM/RS, Ops & Elect. Noida Metro Rail Corporation Limited, Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29, Noida 201301 Email: avikdmrc@gmail.com , nmrcrsandel@gmail.com Website: www.nmrcnoida.com , http://etender.up.nic.in
9	Bid Validity Period	180 days
10	Bid Language	English
11	Bid Currency	INR
12	JV consortium	Not allowed
12	Schedule of Bidding Process	
	Head	Key Dates
	Uploading of Bid	14.02.2023
	Pre-bid Meeting	20.02.2023, 1100 hrs (IST)
	Last date of issuing amendment, if any	24.02.2023
	Last Date of Bid Submission	07.03.2023, 11:00 hrs (IST)
	Date of Technical Bid Opening	07.03.2023, 15:00 hrs (IST)
13	Consortium to be allowed	Not allowed
14	Account details	For Bid Processing Fee & EMD State Bank of India (04077) - Sector 18, Noida Gautam Budh Nagar, Uttar Pradesh -201301 IFSC Code: SBIN0004077 A/c No. 37707840592 Noida Metro Rail Corporation Ltd.

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Note: (i)

Tender Cost and EMD is exempted for Micro & Small Enterprises (MSEs) registered with District Industries Centre or Khadi & Village Industries Commission or Khadi & Village Industries Board or Coir Board or National Small Industries Corporation or Dte. Of Handicraft & Handloom or any other bodies specified by Ministry of Micro, Small & Medium Enterprises for appropriate category and have valid registration certificate as, shall ensure their eligibility w.r.t above and submit registration certificate being MSEs, issued by the body under which they are registered which clearly mentions category of registration i.e. **“supply /supply and installation/Maintenance of Servostablizer work” as on date of tender submission.**

The MSEs would not be eligible for exemption of tender security if:

- a. *Either they are not registered for appropriate category.*
- b. Or they do not have valid registration as on the date of tender submission.

The bidders seeking exemption from 'EMD'

In absence of any of the above requirements no exemption for 'EMD' will be allowed and bidders eligibility shall be dealt as if they are not registered with MSMEs.

No further clarification shall be sought on the above.

1. In case the bidder who has been exempted Tender Cost/Tender Security being Micro & Small Enterprise, and;

- (i) Withdraws his Tender during the period of Tender validity; or
- (ii) Becomes the successful bidder, but fails to commence the work (for whatsoever reasons) as per terms & conditions of Tender; or
- (iii) Refuses or neglects to execute the contract; or
- (iv) Fails to furnish the required Performance Security within the specified time,

The bidder shall be debarred from participating in future tenders for a period of 1 year from the date of discharge of tender/date of cancellation of NOA/annulment of award of contract as the case may be. Thereafter, on expiry of period of debarment, the bidder may be permitted to participate in the procurement process only on submission of required Tender Cost/ Tender Security. Further the Employer may advise the authority responsible for issuing the exemption certificate to take suitable actions against the bidder such as cancellation of enlistment certificate etc.

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1. Section 1: General Information

Background

- a. Noida and Greater Noida are being developed as the satellite towns to New Delhi and an increasing number of people from Delhi and other areas are shifting to these towns in search of fresh air, greenery and better infrastructure. There is a need of providing an efficient, reliable and comfortable transportation system for the population intending to settle in these towns and to the public coming to these areas for education, service and business.
- b. Noida Metro Rail Corporation is a Special Purpose Vehicle (SPV) formed by Noida and Greater Noida Authorities for planning and executing urban transport projects in Noida and Greater Noida regions. The Corporation desires to provide a world-class Public Transportation System with state-of-the-art technology. As such, the overarching criterion for setting up of the Corporation is to help create an efficient, safe, reliable, economical and affordable public transport system. NMRC invites E-Bids **Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida..**
- c. In this regard, the Corporation now invites the interested Bidder/s to submit their proposals as per provisions of this RFP Document.
- d. NMRC will shortlist the Bidders based on evaluation criteria mentioned in this RFP Document. Based on the minimum evaluation criteria, qualified Bidders will be shortlisted, and Financial proposal of only qualified Bidders will be opened.

About Metro Locations

The metro corridor is 29.7 km long and is known as Noida Greater Noida Metro Rail Corridor. It comprises 21 metro stations starting from Sector 51 in Noida and ends up at Depot Station in Greater Noida. The map is in Appendix 1: Metro Alignment.

Communication

All communications should be addressed to -

DGM/RS, Ops & Elect.
Noida Metro Rail Corporation (NMRC) Limited
Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29,
Noida -201301
District Gautam Budh Nagar, Uttar Pradesh
Email: avikdmrc@gmail.com, nmrcsandel@gmail.com

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2. Section 2: Terms of Reference

Scope of Work

- a. The work covered in the tender is as per BOQ placed in section of this RFP.
- b. The technical specifications are set forth in technical specifications- Section 6 of this RFP.
- c. The bidder should inspect the work site after receiving NOA and obtain for himself at his own responsibility all the information which may be necessary for the purpose of the successful execution of the contract.
- d. The bidder shall also make himself conversant with all the local conditions, means of access to the site of work, nature, extent of transport facilities and character of the work and supply of materials, conditions affecting labor and other matters that may affect his tender.
- e. All the work in the BOQ must be done as per instructions of Engineer In charge and also take approval of Make of BOQ items before any purchase.
- f. The commissioning work of servo units and it's accessories shall be carried out as per *E/I direction* and shall **submit prerequisite NOC from concerned department.**
- g. The bidder has to obtain scheme approval after the receipt of NOA.
- h. The equipment including the accessories shall be covered under warranty period/defect liability period. During this period the successful bidder shall replace all defective parts and attend to all repairs / breakdowns. The cost of spare parts for all replacements has to be borne by the successful bidder during the period of warranty/DLP. All warranty cards must be submitted with last bill.

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3. Section 3: Instructions to Bidders

General instructions

- a. A Bidder shall submit only one bid in the same tendering process, either individually as a Bidder. A Bidder who submits or participates in more than one bid will cause all the proposals in which the Bidder has participated to be disqualified. No Bidder can be a sub-contractor while submitting a bid individually or as a partner of a Consortium in the same bidding process. A Bidder, if acting in the capacity of subcontractor in any bid, may participate in more than one bid, but only in that capacity.
- b. The Bidder shall initiate, and actively pursue and involve itself in all investigations and enquiries, Corporation feedbacks, information, convening of and attendance at meetings, and in any other activities as are or may be necessary for producing high quality work as per the requirements.
- c. The Bidder shall carry out the services in compliance with the provisions of this Agreement. All changes necessary to ensure that the Bidder's documents conform to the intent and purpose set out in the Agreement, shall be made at the Bidder's own expense. The Bidder represents that it is a professional and experienced company, and hereby agrees to bear full responsibility for the correctness and technical merit of the services performed.
- d. Bidders shall be evaluated based on the Evaluation Criteria specified in this document. Bidders shall be deemed to have understood and agreed that no explanation or justification for any aspect of the Selection Process will be given and that NMRC's decisions are without any right of appeal whatsoever.
- e. Any entity which has been barred by the Central/State Government in India or by any entity controlled by them, from participating in any project, and the bar subsists as on the date of Bid, would not be eligible to submit an e - Bid.
- f. Bidders are encouraged to inform themselves fully about the assignment and the local conditions before submitting the e-Bid by paying a visit to the Corporation and/or by sending written queries to NMRC before the last date for receiving queries/clarifications.
- g. NMRC shall not be liable for any omission, mistake or error on the part of the Bidder in respect of any of the above or because of any matter or thing arising out of or concerning or relating to e-Bid or the Selection Process, including any error or mistake therein or in any information or data given by NMRC.
- h. The currency for the Proposal shall be the Indian Rupee (INR).
- i. Bidders shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. Bidders shall be considered to have a conflict of interest with one or more parties in this bidding process, if:
 - i. A Bidder has been engaged by the Employer to provide consulting services for the preparation related to procurement or implementation of the project;
 - ii. A Bidder is any associates/affiliates (inclusive of parent firms) mentioned in sub paragraph above; or
 - iii. A Bidder lends, or temporarily seconds its personnel to firms or organizations which are engaged in consulting services for the preparation related to procurement for an implementation of the project, if the personnel would be involved in any capacity on the same project.

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Cost of Bid Document / e-Tender processing Fee

- a. The Bidder shall bear all costs associated with the preparation and submission of its e-Bid and Noida Metro Rail Corporation Ltd. ("NMRC" or "the Corporation"), will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the e-Bid process.
- a. This tender document is available on the web site <http://etender.up.nic.in> or on NMRC website (www.nmrcnoida.com) to enable the Bidders to view, download the e-Bid document and submit e-Bids online up to the last date and time mentioned in e-Tender notice/e-tender document against this e-Tender. The Bidders shall have to pay cost of bid document/e-Tender processing fee of as mentioned in **Data Sheet** through RTGS/NEFT only payable in favour of Noida Metro Rail Corporation Limited in the A/c No. mentioned in **Data Sheet**. The scanned copy of RTGS/NEFT receipt with transaction Id certified by the same bank must be enclosed along with the e-Bid. This cost of bid document/e-Tender processing fee as mentioned in **Data Sheet** will be non-refundable. Tender without cost of bid document/e-Tender processing fee in the prescribed form, will not be accepted.

Acknowledgement by Bidder

It shall be deemed that by submitting the e-Bid, the Bidder has:

- a. made a complete and careful examination of the e-Bid;
- b. received all relevant information requested from NMRC;
- c. acknowledged and accepted the risk of inadequacy, error or mistake in the information provided in the e-Bid or furnished by or on behalf of NMRC;
- d. satisfied itself about all matters, things and information, necessary and required for submitting an informed Application and performance of all its obligations there under;
- e. acknowledged that it does not have a Conflict of Interest; and
- f. agreed to be bound by the undertaking provided by it under and in terms hereof.

Availability of Bid Document

This Bid document is available on the web site <http://etender.up.nic.in> or on Noida Metro website www.nmrcnoida.com to enable the Bidders to view, download the e-Bid document and submit e-Bids online up to the last date and time mentioned in e-Bidder notice/e-Bid document. The Bidders shall have to pay e-Bid document fee and EMD as mentioned in Data sheet through RTGS/NEFT on addresses given in data sheet. The scanned copy of RTGS/NEFT with transaction ID certified by the same bank must be enclosed along with the e-Bid. This e-Bid document fee will be non-refundable. Bid without Bid fee in the prescribe form will not be accepted.

Clarifications of e-Bid

- a. During evaluation of e-Bid, NMRC may, at its discretion, ask the Bidder for a clarification of his/her e-Bid. The request for clarification shall be in writing.
- b. Any queries or request for additional information concerning this RFP shall be submitted in writing or by fax and e-mail to the GM/Technical, NMRC **only before or during Pre-Bid Meeting** held at NMRC. The envelopes/ communication shall clearly bear the following identification/ title: **"Queries / Request for Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.."** The responses will be posted to all such queries on the official website www.nmrcnoida.com. NMRC reserves the right not to respond to any questions or provide any clarifications, in its sole discretion, and nothing in this

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- c. Clause shall be taken or read as compelling or requiring NMRC to respond to any question or to provide any clarification.
- d. A pre-submission meeting shall be called on the date mentioned in **Data Sheet** at NMRC Office. Any change corresponding to date, if any, shall be communicated to the Bidder vide NMRC/ e-Tendering website.
- e. In case the Bidder seeks for any queries, he shall send letter or e-mail to the correspondence address given in Data Sheet.
- f. However, NMRC shall not entertain any correspondence from the Bidders during the period of e-Bid opening to selection of the successful Bidder. Any wrong practice shall be dealt under Fraud and Corrupt Practices.
- g. The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the Tender and entering into a contract for the proposed work. The costs of visiting the Site shall be borne by the Bidder. It shall be deemed that the Contractor has undertaken a visit to the Site of Works and is aware of the site conditions prior to the submission of the tender documents.
- h. The Bidder and any of his personnel will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the Bidder, and his personnel, will release and indemnify the Employer and his personnel from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of the inspection.

Amendment of e-Bid Document

- a. At any time prior to the deadline for submission of e-Bid, NMRC may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the e-Bid document by amendments. Such amendments shall be uploaded on the e-procurement website <http://etender.up.nic.in> or NMRC's website www.nmrcnoida.com. The relevant clauses of the e-Bid document shall be treated as amended accordingly.
- b. It shall be the sole responsibility of the prospective Bidder to check the web site <http://etender.up.nic.in> or NMRC's website www.nmrcnoida.com from time to time for any amendment in the e-Bid documents. In case of failure to get the amendments, if any, NMRC shall not be responsible for it.
- c. In order to allow prospective e-Bids a reasonable time to take the amendment into account in preparing their e-Bids, NMRC, at the discretion, may extend the deadline for the submission of e-Bids. Such extensions shall be uploaded on the e-procurement website <http://etender.up.nic.in> or NMRC's website www.nmrcnoida.com.

Preparation and submission of Bids

Language of e-Bid

The e-Bid prepared by the Bidder, as well as all correspondence and documents relating to the e-Bid exchanged by the Bidder and NMRC shall be written in English language. Only English numerals shall be used in the e-Bid. The correspondence and documents in any other language must be accompanied by transcripts verified by the Embassy of Home Country or equivalent.

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Documents constituting the e-Bid

The e-Bid prepared by the Bidder shall comprise the following components:

a. Technical e-Bid- Technical e-Bid will comprise of -

- i. **Fee details** - Details of Bid processing fee and prescribed EMD
- ii. **Eligibility details** - Includes copies of required documents in PDF format justifying that the Bidder is qualified to perform the contract if his/her bid is accepted and the Bidder has financial & technical capability necessary to perform the contract and meets the criteria outlined in the Qualification requirement and technical specification and fulfil all the conditions of the contract.
- iii. **Technical evaluation** - Details of all documents needed for Technical evaluation as mentioned in this RFP

b. Financial e-Bid -

- i. **Price bid** – Bill of Quantities in XLS format to be filled in after downloading from the e-Procurement website for this e-tender. There shall be a single quote.

Documents establishing Bidder's Qualification

- a. The Bidder shall furnish, as part of its technical e-Bid, documents establishing the Bidder's qualification to perform the contract if its e-Bid is accepted. The documentary evidence should be submitted by the Bidder electronically in the PDF format.
- b. The documentary evidence of Bidder's qualification to perform the contract if its e-Bid is accepted shall be as per qualification requirements specified in e-Bid document.

E-Bid form

The Bidder shall complete the e-Bid form and the appropriate price schedule/BOQ furnished in the e-Bid document.

E-Bid Currency

Prices shall be quoted in Indian Rupees only.

Formats and Signing of e-Bid

- a. The Bidder shall prepare one electronic copy of the technical e-Bid and financial e-Bid separately.
- b. The e-Bid document shall be digitally signed, at the time of uploading, by the Bidder or a person or persons duly authorized to bind the Bidder to the contract. The later authorization shall be indicated by a scanned copy of written power-of attorney accompanying the e-Bid. All the pages/documents of the e-Bid that are to be uploaded shall be digitally signed by the person authorized to sign the e-Bid.
- c. Bidders should provide all the information as per the RFP and in the specified formats. NMRC reserves the rights to reject any proposal that is not in the specified formats.
- d. In case the Bidders intends to provide additional information for which specified space in the given format is not sufficient, it can be furnished in duly stamped and signed PDFs.

Deadline for submission of e-Bid

E-Bid (Technical and financial) must be submitted by the Bidder at e-procurement website <http://etender.up.nic.in> not later than the time specified on the prescribed date (as the server time displayed in the e-procurement website). NMRC may, at its discretion, extend this deadline for

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submission of e-Bid by amending the e-Bid document, in which case all rights and obligations of NMRC and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

Submission of e-Bid

- a. The bid submission module of e-procurement website <http://etender.up.nic.in> enables the Bidders to submit the e-Bid online in response to this e-Bid published by NMRC.
- b. Bid submission can be done only from the bid submission start date and time till the bid submission end date and time given in the e-Bid. Bidders should start the bid submission process well in advance so that they can submit their e-Bid in time.
- c. The Bidder should submit their e-Bid considering the server time displayed in the e-procurement website. This server time is the time by which the e-Bid submission activity will be allowed till the permissible time on the last/end date of submission indicated in the e-Bid schedule.
- d. Once the e-Bid submission date and time is over, the Bidders cannot submit their e-Bid. For delay in submission of e-Bid due to any reasons, the Bidders shall only be held responsible.

The Bidders have to follow the following instructions for submission of their e-Bid:

- a. For participating in e-Bid through the e-Bidding system it is necessary for the Bidders to be the registered users of the e-procurement website <http://etender.up.nic.in>. The Bidders must obtain a user login Id and password by registering themselves with U.P. Electronics Corporation Ltd., Lucknow if they have not done so previously for registration.
- b. In addition to the normal registration, the Bidder has to register with his/her digital signature certificate (DSC) in the e-Bidding system and subsequently he/she will be allowed to carry out his/her e-Bid submission activities. Registering the digital signature certificate (DSC) is a one-time activity. Before proceeding to register his/her DSC, the Bidder should first log on to the e-Bidding system using the user login option on the home page with the login Id and password with which he/she has registered.

For successful registration of DSC on e-procurement website <http://etender.up.nic.in> the Bidder must ensure that he/she should possess class-2/class-3 DSC issued by any certifying authorities approved by controller of certifying authorities, Government of India, as the e-procurement website <http://etender.up.nic.in> is presently accepting DSC issued by these authorities only. The Bidder can obtain user login Id and perform DSC registration exercise given above even before the e-Bid submission date starts. NMRC shall not be held responsible if the Bidder tries to submit his/her e-Bid at the moment before end date of submission but could not submit due to DSC registration problem.

- c. The Bidder can search for active Bids through "search active tenders" link, select a Bid in which he/she is interested in and then move it to 'My Tenders' folder using the options available in the e-Bid submission menu. After selecting and the Bid, for which the Bidder intends to e-Bid, from "My tenders" folder, the Bidder can place his/her e-Bid by clicking "pay offline" option available at the end of the view Bid details form. Before this, the Bidder should download the e-Bid document and price schedule/bill of quantity (BOQ) and study them carefully. The Bidder should keep all the documents ready as per the requirements of e-Bid document in the PDF format except the price schedule /bill of quantity (BOQ) which should be in the XLS format (excel sheet).
- d. After clicking the 'pay offline' option, the Bidder will be redirected to terms and conditions page. The Bidder should read the terms & conditions before proceeding to fill in the Bid fee and EMD offline payment details. After entering and saving the Bid fee and EMD details form so that "bid document preparation and submission" window appears to upload the documents as per

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technical (fee details, qualification details, e-Bid form and technical specification details) and financial (e-Bid form and price schedule/BOQ) schedules/packets given in the Bid details. The details of the RTGS/NEFT should tally with the details available in the scanned copy and the date entered during e-Bid submission time otherwise the e-Bid submitted will not be accepted.

- e. Next the Bidder should upload the technical e-Bid documents for fee details (e-Bid fee and EMD), Qualification details. Before uploading, the Bidder has to select the relevant digital signature certificate. He may be prompted to enter the digital signature certificate password, if necessary. For uploading, the Bidder should click "browse" button against each document label in technical and financial schedules/packets and then upload the relevant PDF/XLS files already prepared and stored in the Bidder's computer. The required documents for each document label of technical (fee details, qualification details, e-Bid form and technical specification details) and financial (e- Bid form and price schedule/BOQ) schedules/packets can be clubbed together to make single different files for each label.
- f. The Bidder should click "Encrypt" next for successfully encrypting and uploading of required documents. during the above process, the e-Bid documents are digitally signed using the DSC of the Bidder and then the documents are encrypted/locked electronically with the DSC's of the bid openers to ensure that the e-Bid documents are protected, stored and opened by concerned bid openers only.
- g. After successful submission of e-Bid document, a page giving the summary of e-Bid submission will be displayed confirming end of e-Bid submission process. The Bidder can take a printout of the bid summary using the "print" option available in the window as an acknowledgement for future reference.
- h. NMRC reserves the right to cancel any or all e-Bids without assigning any reason.

Late e-Bid

- a. Bids received by NMRC after the specified time on the Bid Due Date shall not be eligible for consideration and shall be summarily rejected.
- b. The server time indicated in the bid management window on the e-procurement website <http://etender.up.nic.in> will be the time by which the e-Bid submission activity will be allowed till the permissible date and time scheduled in the e-Bid.
- c. Once the e-Bid submission date and time is over, the Bidder cannot submit his/her e-Bid. Bidder has to start the bid submission well in advance so that the submission process passes off smoothly. The Bidder will only be held responsible if his/her e-Bid is not submitted in time due to any of his/her problems/faults, for whatsoever reason, during e-Bid submission process.

Withdrawal and resubmission of e-Bid

- a. At any point of time, a Bidder can withdraw his/her e-Bid submitted online before the bid submission end date and time. For withdrawing the Bidder should first log in using his/her login id and password and subsequently by his/her digital signature certificate on the e-procurement website <http://etender.up.nic.in>. The Bidder should then select "My bids" option in the bid submission menu. The page listing all the bids submitted by the Bidder will be displayed. Click "View" to see the details of the bid to be withdrawn. After selecting the "bid withdrawal" option the Bidder has to click "Yes" to the message "Do you want to withdraw this bid?" displayed in the bid information window for the selected bid. The Bidder also has to enter the bid withdrawing reasons and up- load the letter giving the reasons for withdrawing before clicking the "Submit" button. The Bidder has to confirm again by pressing "OK" button before finally withdrawing his/her selected e-Bid.

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- b. No e-Bid may be withdrawn in the interval between the deadline for submission of e-Bids and the expiration of period of e- bid validity. Withdrawal of an e-Bid during this interval may result in the forfeiting of Bidder's e-Bid security.
- c. The Bidder can re-submit his/her e-Bid as when required till the e-Bid submission end date and time. The e-Bid submitted earlier will be replaced by the new one. The payment made by the Bidder earlier will be used for revised e-Bid and the new e-Bid submission summary generated after the successful submission of the revised e-Bid will considered for evaluation purposes. For resubmission, the Bidder should first log in using his/her login Id and password and subsequently by his/her digital signature certificate on the e-procurement website <http://etender.up.nic.in>. The Bidder should then select "My bids" option in the bid submission menu. The page listing all the bids submitted by the Bidder will be displayed. Click "View" to see the detail of the e-Bid to be re-submitted. After selecting the "bid resubmission" option, click "Encrypt & upload" to upload the revised e-Bids documents.
- d. The Bidder can submit their revised e-Bids as many times as possible by uploading their e-Bid documents within the scheduled date & time for submission of e-Bids.
- e. No e-Bid can be resubmitted subsequently after the deadline for submission of e-Bids.

NMRC's right to accept any e-Bid and to reject any or all e-Bids.

- a. Notwithstanding anything contained in this e-Bid, NMRC reserves the right to accept or reject any Bid and to annul the Selection Process and reject all Bids, at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons thereof.
- b. NMRC reserves the right to reject any Bid if:
 - At any time, a material misrepresentation is made or uncovered, or
 - The Bidder does not provide, within the time specified by NMRC, the supplemental information sought by NMRC for evaluation of the e-Bid.
- c. Such misrepresentation/ improper response may lead to the disqualification of the Bidder. If such disqualification /rejection occurs after the e-Bid have been opened and the highest-ranking Bidder gets disqualified / rejected, then the NMRC reserves the right to consider the next best Bidder, or take any other measure as may be deemed fit in the sole discretion of NMRC, including annulment of the Selection Process.

Period of validity of e-Bid

- a. e-Bid shall remain valid for 180 days after the date of e-Bid opening prescribed by NMRC. An e-Bid valid for a shorter period shall be rejected by NMRC as non-responsive.
- b. In exceptional circumstances, NMRC may solicit the Bidder's consent to an extension of the period of e-Bid validity. The request and the response thereto shall be made in writing.

Correspondence with the Bidder

- a. Save and except as provided in this e-Bid, NMRC shall not entertain any correspondence with any Bidder or its Technical Partners in relation to acceptance or rejection of any e-Bid.
- b. Subject to Clause 3.4.5 no Bidders or its Technical Partners shall contact NMRC on any matter relating to his e-Bid from the time of Bid opening to the time contract is awarded.
- c. Any effort by the Bidder or by its Technical Partners to influence NMRC in the Bid evaluation, Bid comparison or contract award decisions, may result in the rejection of his Bid.

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Earnest Money Deposit

Earnest money deposit (EMD)

- a. The Bidder shall furnish, as part of its e-Bid, an e-Bid security/ EMD as stated in Data Sheet in form of RTGS/NEFT only in favour Noida Metro Rail Corporation Limited in the A/c No. mentioned in **Data Sheet**. The scanned copy of RTGS/NEFT receipt of Security/ EMD with transaction Id certified by the same bank must be enclosed along with the e-Bid. Tender without Earnest Money in the prescribed form, will not be accepted.
- b. Any e-Bid not secured in accordance with above shall be treated as non-responsive and rejected by NMRC.
- c. Unsuccessful Bidder's EMD will be returned within 45 days of opening of the Price Bid in case of Conclusion or discharge of the tender.
- d. No interest will be paid by the Employer on the Earnest Money Deposit.
- e. The successful Bidder's e-Bid EMD will be adjusted with Performance Bank Guarantee, if applicable, to be submitted by the Bidder upon signing the contract.
- f. The EMD may be forfeited:
 - i. If Bidder (a) withdraws its e-Bid during the period of e-Bid validity specified by the Bidder on the e- bid form: or (b) does not accept the correction of errors or (c) modifies its e-Bid price during the period of e-Bid validity specified by the Bidder on the form.
 - ii. In case of a successful Bidder, if the Bidder fails to sign the contract with the Corporation.

Opening and Evaluation of Bids

Opening of technical e-Bid by NMRC

- a. NMRC will open all technical e-Bids, in the presence of Bidder`s representatives who choose to attend on the prescribed date of opening at NMRC Office. The Bidder's representatives who are present shall submit the letter to NMRC on the letter head of the company stating that the representative (name) is authorized to attend the meeting (Please note – The representative is required to carry a copy during pre-bid and other related meetings as well). He / She shall sign a register evidencing their attendance at NMRC. In the event of the specified date e-Bid opening being declared a holiday for the Corporation, the e -bids shall be opened at the appointed time and place on the next working day.
- b. The Bidder who is participating in e-Bid should ensure that the RTGS/NEFT of Bid Processing Fee and EMD must be submitted in the prescribed account of NMRC within the duration (strictly within opening & closing date and time of individual e-Bid) of the work as mentioned in Bid notice, otherwise, in any case, e-Bid shall be rejected.
- c. The Bidders names and the presence or absence of requisite e-Bid security and such other details as NMRC at its discretion may consider appropriate, will be announced at the opening.

Opening of financial e-Bid

- a. After evaluation of technical e-Bid, through the evaluation committee NMRC shall notify those Bidders whose technical e-Bids were considered non-responsive to the conditions of the contract and not meeting the technical specifications and qualification requirements indicating that their financial e-Bids will not be opened.

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- b. NMRC will simultaneously notify the Bidders, whose technical e-Bids were considered acceptable to the Corporation. The notification may be sent by e-mail as provided by Bidder.
- c. The financial e-Bids of technically qualified Bidders shall be opened in the presence of technically qualified bidders who choose to attend. The date and time for opening of financial bids will be communicated to the technically qualified Bidders subsequently after completion of technical bids evaluation through e-mail provided by the Bidder.

Correction of Errors

- a. Financial Bids determined to be responsive will be checked by NMRC for any arithmetic errors. Where there is a discrepancy between the rate quoted in the Financial Bid, in figures and in words, the amount in words will prevail over the amounts in figures, to the extent of such discrepancy.
- b. The amount stated in the Financial Bid will be adjusted by NMRC in accordance with the above procedure for the correction of errors and shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected quoted rate of e-Bid, his e-Bid will be rejected, and his Bid Security shall be liable for forfeiture in accordance with Clause 3.3.1f

Examination of e-Bid document

- a. The NMRC will examine the e-Bid to determine if:
 - i. They are complete;
 - ii. They meet all the conditions of the contract;
 - iii. The required e-Bid Processing fee, EMD and other required documents have been furnished;
 - iv. The documents have been properly digitally signed; and
 - v. The e-Bids are in order.
- b. Any e-Bid or e-Bids not fulfilling these requirements shall be rejected.

Contacting NMRC

- a. No Bidder shall contact NMRC on any matter relating to his/her e-Bid, from the time of the e-Bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of NMRC, he/she can do so in writing.
- b. Any effort by a Bidder to influence NMRC in its decisions on e-Bid evaluation, e- bid comparison or contract award may result in rejection of the Bidder's e-Bid.
- c. In the event of any information furnished by the Bidder is found false or fabricated, the minimum punishment shall be debarring /blacklisting from Noida Metro works and legal proceeding can also be initiated. EMD of such bidders will be forfeited.

Confidentiality

- a. Information relating to the examination, clarification, evaluation, and recommendation for the Bidders shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising NMRC in relation to or matters arising out of or concerning the Bidding Process. Any effort by a Bidder to exert undue or unfair influence in the process of examination, clarification, evaluation and comparison of Proposal shall result in outright rejection of the offer, made by the said Bidder.

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- b. NMRC shall treat all information, submitted as part of Bid, in confidence and shall require all those who have access to such material to treat the same in confidence. NMRC may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or NMRC or as may be required by law or in connection with any legal process.

Award of Contract

Award Criteria

- a. NMRC will award the contract as per evaluation criteria stated in the RFP Document.
- b. NMRC will award the contract to the successful Bidder whose bid has been determined to be responsive to all the conditions of the contract and meeting the eligibility requirement of the bidding document.

Notice of Award (NOA)

- a. Prior to the expiration of the period of e-Bid validity, NMRC will notify the successful Bidder in writing, by letter/e-mail/fax, that its e-Bid has been accepted.
- b. The acceptance of NOA will constitute the formation of the contract.

Signing of contract

At the same time as NMRC notifies the successful Bidder that it's e-Bid has been accepted, the successful Bidder shall have to sign the contract agreement with relevant document as mentioned in the RFP. The agreement draft along with other related terms and conditions will be same as furnished in this e-Bid. Any refusal will not be allowed. The Bidder need not download and submit in hard copies of these documents.

NMRC's right to accept any e-Bid and to reject any or all e-Bids

NMRC reserves the right to accept or reject any e-Bid, and to annul the e-Bid process and reject all e-Bids at any time prior to contract award, without thereby incurring any liability to the affected Bidder or Bidders.

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4. Section 4: Qualification, Evaluation and Selection Process

4.1 Eligibility Criteria

The Bidder's competence and capability is proposed to be established by the following parameters. The Bidder should meet all the criteria given in this section.

- a. Sole proprietorship, registered partnership firm, public limited company, private limited company can submit the Bid. The firms and the companies should be registered in India. JV and Consortium are not allowed.
- b. The Bidder should have a minimum experience of having satisfactorily completed similar works during last 7 (Seven) years period ending last day of month before the one in which the bids are invited should be either of the following:
 - i. One similar completed work costing not less than the amount equal to **Rs. 19.90 Lakh** (Rupees Nineteen Lacs Ninety Thousand only) or
 - ii. Two similar completed works each costing not less than the amount equal to **Rs. 12.50 Lakh** (Rupees Twelve Lacs and Fifty Thousand only) or
 - iii. Three similar completed works each costing not less than the amount equal to **Rs. 9.94 Lakh** (Rupees Nine Lacs and Ninety Four Thousand only)

Similar work" for this contract shall be "Supply, installation testing and commission/maintenance of three phase servo stabilizer of at least 100 KVA capacity/ Supply, installation testing and commission of at least 100 KVA transformer " in NMRC/ any other Metro Organization/ Central govt./ State govt./PSU's/ Private sector companies of repute.

- c. The Bidder should have minimum **average annual turnover** of INR **24,82,874.00 (Rupees Twenty Four Lakh eighty two thousand eight Hundred seventy four only)** in the last 3 (three) Financial Years (**2019-20, 2020-21, 2021-22**) preceding the Bid Due Date.
- d. T1 - Liquidity
NA
- e. T2 - Profitability:
Profit before Tax (PBT) during any of the financial year should be positive during immediately preceding, three audited financial years.
- f. T3 - Net Worth:
NA
- g. The Bidder should not have been blacklisted/ banned/ declared ineligible for corrupt and fraudulent practices by the Government of India/ any State Government/ Government Agency and Supreme court and contracts have been terminated/ foreclosed by any company / department dueto non- fulfilment of Contractual obligation in last 5 (five) financial years.

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The Bidder shall also furnish the following documentary proof (as per eligibility criteria):

- a. For above criteria 4.1a
 - i. Statutory proof of existence as the legal entity.
 - ii. PAN certificate as per legal entity
 - iii. GST RC.
- b. For above criteria 4.1b
 - i. Form 4: Work Experience with documentary evidence as mentioned in the Form
- c. For above criteria 4.1 c and e.
 - i. Form 5: Financial Capability Details
 - ii. A copy of the Audited balance sheets and Profit and Loss Statements for the last 3 (Three) financial years
In case the Financial Statements for the latest financial year are not audited and therefore the Bidder cannot make it available, the Bidder shall give an undertaking to this effect and the statutory auditor/chartered accountant shall certify the same. In such a case, the Bidder shall provide the Audited Financial Statements for 2 (two) years preceding the year for which the Audited Financial Statement is not being provided. Also, pertaining to latest financial year, the bidder shall submit an affidavit certifying that "The Annual Accounts have not been audited so far we are submitting the CA certified provisional accounts, which shall be substantiated by the audited accounts when prepared"
 - iii. Self-attested copy of ITR of last three audited financial years.
- d. For above criteria 4.1g
 - i. Form 7: Undertaking

Bid Capacity Criteria:

Bid Capacity: The Bidders will be qualified only if their available bid capacity is more than the approximate cost of work as per NIT. Available bid capacity will be calculated based on the following formula:

Bid capacity will be calculated based on the following formula:

$$\text{Available Bid Capacity} = 2 * A * N - B$$

Where,

A = Maximum of the value of work executed in any one year during the last three financial years (updated to the last day of the previous month of tender submission price level assuming 5% inflation for Indian Rupees every year and 2% for foreign currency portions per year).

N = No. of years prescribed for completion of the work

B = Value of existing commitments (as on the last day of the previous month of tender submission) for on-going works during period of 2 months w.e.f. from the first day of the month of tender submission.

Financial data for latest last three financial years has to be uploaded by the Bidder in Form-5 of Tender along with audited financial statements. The financial data in the prescribed format shall be certified by the Chartered Accountant with his stamp and signature in original along **with UDIN and membership No.**

Value of existing commitments for on-going works during period of 2 months w.e.f. from the first day of the month of tender submission has to be uploaded by the Bidder in Bid Capacity Form No - 13 of Tender. These data shall be certified by the Chartered Accountant with his stamp and signature in original and **UDIN and membership No.**

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Personnel

The Bidder shall submit - Form 11: Undertaking pertaining to Personnel a staffing schedule containing the names, qualifications, professional experience and corporate affiliation of all proposed management personnel (above the level of shift supervisor) and specialists for this work. The sub- mission shall include a provisional management structure and organization chart showing areas of responsibility, relative seniorities and lines of reporting.

RESOURCES PROPOSED FOR THE PROJECT – PERSONNEL

The figures indicated below are the minimum number of Project-Personnel required which are to be deployed as per the minimum level of supervision and qualification/experience of site staff is given as follows:

S. No.	Designation of Project Personnel	Minimum Requirement
1.	Engineer/Site Engineer having at least 5 years of experience in transformer/servostablizer installation & repair work.	1
2.	Supervisor at-least three years' experience in similar work	1

It is to be noted that:

- i. The contractor shall deploy resources as per the above-mentioned minimum requirement and also confirm to deploy manpower over and above the minimum numbers indicated above, if the work requires so.
- ii. These minimum resources are as per the requirements of the various activities at different stages of works. All resources need not to be mobilized simultaneously, resources as per the requirement of various stages of works shall be mobilized in accordance with the instructions of the Engineer. The decision of the Engineer shall be final and bonding.
- iii. The performance of project personal deployed will be evaluated periodically by Employer during the contract period. In case the performance of any of the personnel is not satisfactory, the contractor shall replace them with good personnel immediately as per the directions of the Engineer.
- iv. **If staff is absent or found missing from his duty, recovery @ ₹2000/- for supervisor and @ ₹3000/- for engineer per day shall be imposed on the contractor and to be recovered from the running bill of the contractor.**

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Compliance with Technical Specifications

The Bidders must comply with the stipulated technical specifications as mentioned in the tender documents.

Information of the Technical and Financial Proposal

- a. The Bidder satisfying technical and financial eligibility criteria under Clause 4.1 shall be considered as technically and financially qualified.
- b. The financial proposal of only technically qualified Bidders shall be opened for evaluation.
- c. The Bidder with the lowest quoted price for the RFP for Supply, installation, testing and commissioning of new split AC and its accessories at NMRC head office, stations and depot in the financial quote (**L1 bidder**) shall be selected for the award of contract.

Selection of Bidder

After the above evaluation process, the Technically Qualified Bidder, who is declared as **L1 (lowest quoted price)** may be declared as the selected Bidder ("Selected Bidder") for the Project.

- a. In case, two or more technically qualified bidders quote the same rate in the Commercial Bid, and become Lowest (i.e. L-1), then the tender would be awarded to the bidder who has the highest / higher Average Annual Turnover from 'Similar Works' (as per Minimum Eligibility Criteria defined in Section 4 under "Definition of Similar Work") during the last 3 years ending on the last day of the month preceding the month in which the tender has been floated. Experience certificate / work completion certificate on client's letter head is mandatory to ascertain the nature, period and value of work which shall be required to be uploaded by the bidder by the last date of tender submission. Prior to the expiry of the period of bid validity, NMRC will notify the successful bidder in writing, either through Notice of Award (NOA), that his bid has been accepted.
- b. Prior to the expiry of the period of bid validity, NMRC will notify the successful bidder in writing, either through Notice of Award (NOA), that his bid has been accepted.
- c. The NOA would be sent in duplicate to the successful bidder, who will return one copy to NMRC duly acknowledged, signed and stamped by the authorized signatory of the bidder, as an unconditional acceptance of the NOA, within 10 (ten) days from the date of issue of NOA.
- d. No correspondence will be entertained by NMRC from the unsuccessful bidders.

Notice of Award and Execution of Contract Agreement

- a. NMRC will notify the Successful Bidder by a Notice of Award (NOA) that its bid has been accepted.
- b. The Selected Bidder shall, within 10 (ten) days of the receipt of the NOA, sign and return the duplicate copy of the NOA in acknowledgement thereof along with letter of acceptance of NOA. In the event, the duplicate copy of the NOA duly signed by the Selected Bidder and letter of acceptance of NOA is not received by the stipulated date, NMRC may, unless it consents to extension of time for submission thereof, appropriate the Bid Security of such Bidder as mutually agreed genuine pre-estimated loss and damage suffered by NMRC because of failure of the Selected Bidder to acknowledge the NOA
- c. The Successful Bidder shall execute the Contract Agreement within 30 (Thirty) days of the letter of acceptance of NOA or such extended period as may be decided by the Competent Authority.
- d. Failure of the Successful Bidder to comply with the requirement of acknowledgement of NOA shall constitute sufficient grounds for the annulment of the NOA, and forfeiture of the bid security.

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- e. The Purchaser reserves the right to increase or decrease the quantity up to 25% of the quantity offered by the successful Bidder. The bidder is bound to accept the increase or decrease in the tendered quantity up to 25% under this clause without any change in unit price.
- In case the variation in individual items or the group of items as stipulated above, is more than 25% on plus side, the rate for the varied quantity beyond 25% shall be negotiated between NMRC and the Contractor and mutually agreed rates arrived at before actual execution of the extra quantity. In case the contractor executes the extra quantity without written approval of the NMRC with specific instructions to execute pending the finalization of rates, the payment shall be made at contract rate only. In the event of disagreement, the Engineer shall fix such rates of price as are, in his opinion appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on account payments to the Contractor. Alternatively, in the event of disagreement, the Contractor shall have no claim to execute extra quantities/new items and the Engineer shall be free to get such additional quantities beyond 25% new items executed through any other agency. However, if the Engineer or the Employer so directs the Contractor shall be bound to carry out any such additional quantities beyond the limits stated above original quantities and or new items and the disagreement or the difference regarding rates to be paid for the same shall be settled in the manner laid down under the conditions for the settlement of dispute.

Performance Bank Guarantee / Security Deposit

- a. To fulfil the requirement of performance bank guarantee during the implementation period, the Successful Bidder (herein referred to as the "Contractor") shall deposit **10% of the Contract Price** in form of FDR/ DD or unconditional and irrevocable Bank Guarantee bond issued by a scheduled bank in favour of Noida Metro Rail Corporation Limited, within 30 days from Notice of Award. EMD amount of successful bidder shall be adjusted in the performance bank guarantee, if applicable. For unsuccessful bidder, EMD shall be refunded without any interest. The Performance Guarantee should be valid for a period of **one (1) months beyond the Defect Liability Period and will be released after successful completion of Defect Liability Period and handover of the system with necessary documents to the department (NMRC).**
- b. It is to note that if contract value increases by more than 25% of the original contract value, the performance bank guarantee shall be increased accordingly.
- c. A Contract agreement will have to be signed by the Contractor at his cost on proper stamp paper. Without performance guarantee by Contractor, Contract agreement shall not be signed.
- d. NMRC reserves the right for deduction of NMRC dues from Contractor's Performance Bank Guarantee/ Security Deposit (interest free) for –
- (i). Any penalty imposed by NMRC for violation of any terms and conditions of agreement committed by the Contractor.
 - (ii). Any amount which NMRC becomes liable to the Government/Third party due to any default of the Contractor or any of his director/ employees/ representatives/ servant/ agent, etc.
 - (iii). Any payment/ fine made under the order/judgment of any court/consumer forum or law enforcing Contractor or any person duly empowered in his behalf.
 - (iv). Any outstanding payment/ claims of NMRC remained due after completion of relevant actions as per agreement
- e. **The Bank Guarantee must be issued by a bank branch located in Delhi/NCR, Noida and Greater Noida region only. The Bank guarantee shall be extended and renewed in advance before expiry of existing bank guarantee.**

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- f. Once the amount under Clause 'd' is debited, the Contractor shall replenish the Security Deposit/ Performance Bank Guarantee to the extent the amount is debited within 15 days period, failing which, it shall be treated as Contractor Event of Default and will entitle NMRC to deal with the matter as per the provisions of RFP and Contract Agreement.

Contract during Proposal Evaluation

- a. Proposals shall be deemed to be under consideration immediately after they are opened and until such time NMRC makes official intimation of award/ rejection to the Bidders. While the Proposals are under consideration, Bidders and/ or their representatives or other interested parties are advised to refrain from contacting by any means, NMRC and/ or their employees/ representatives on matters related to the Proposals under consideration till the time Contract is awarded.
- b. Any effort by a Bidder to influence NMRC in its decisions on e-Bid evaluation, e-Bid comparison or contract award may result in rejection of the Bidder's e-Bid.
- c. In the event of any information furnished by the Contractor is found false or fabricated the minimum punishment shall be debarred/ blacklisting and the legal proceeding may also be initiated.
- d. If the Bidder wishes to bring additional information to the notice of NMRC, he/she can do so in writing. All correspondence/ enquiry should be submitted to the following in writing by fax/ post/courier:

DGM (RS, Ops & Elect)
Noida Metro Rail Corporation (NMRC) Limited
Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29,
Noida -201301
District Gautam Budh Nagar, Uttar Pradesh
Email: avikdmrc@gmail.com, nmrccrsandel@gmail.com
- e. No interpretation, revision, or other communication from NMRC regarding this solicitation is valid unless in writing and signed by the competent authority from NMRC.

Other Instruction

- a. Canvassing in connection with the tenders is strictly prohibited and the tenders, submitted by Bidder, who resort to canvassing, are liable to be rejected. EMD will be forfeited of those tenders who will be found non-serious and if it is felt by the tender committee that the Bidders submitted their tender only to influence the tendering process.
- b. On acceptance of the tender, the name of the accredited representative of the Contractor, who would be responsible for taking instructions from NMRC or the official deputed by NMRC, shall be communicated to NMRC or the official deputed by NMRC in writing.

Project Financial Terms

Payment Terms

- a. The payment for items given in Bill of Quantity/Pricing Document shall be made based as per SCC clause S. No-23, **Sub-Clause 11.6.**
- b. The work executed against the BOQ items in would be paid on measurement basis.
- c. The Contractor may raise their 'On Account' payments on monthly basis as per the status of work on the last day of the respective month.
- d. All the statutory compliances shall be followed as relevant.

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Contractor's Labour Camp

Employer not to provide Quarters for Contractor's Labour

The Employer will not provide living accommodation for the use of the Contractor or any of his staff or labour employed on the Works. Living accommodation shall not be established on any land provided to the contractor by the Employer.

Provision of Labour Camp

The Contractor, shall, at his own expense, make adequate arrangements for the housing, supply of drinking water and provision of bathrooms, latrines and urinals, with adequate water supply, for his staff and workmen directly or through sub-contractors employed on the Works at the location authorised by Engineer. No labour camp shall be allowed at work site or any unauthorised place. The Contractor at his own cost shall maintain all campsites in a clean and sanitary condition. The Contractor shall obey all health and sanitary rules and regulations and carry out at his cost all health and sanitary measures that may, from time to time, be prescribed by the Local/Medical Authorities and permit inspection of all health and sanitary arrangements at all times by the Employer, Engineer and the staff of the local municipality or other authorities concerned. Should the Contractor fail to provide adequate health and sanitary arrangements these shall be provided by the Employer and the cost recovered from the Contractor. The Contractor shall at his own cost, provide First Aid and Medical facilities at the Labour Camp and at work sites on the advice of the Medical Authority in relation to the strength of the Contractor's staff and workmen, employed directly or through sub-contractors. The Contractor shall at his own cost, provide the following minimum requirements for fire precautions:

- Portable Fire Extinguishers
- Manual Fire Alarms
- Water Supply for use by the Fire Service.

The Contractor at his own cost shall provide necessary arrangements for keeping the camp area sufficiently lighted to avoid accidents to the workers. He should also ensure that electrical installations are done by Trained Electricians. These installations shall be maintained, and daily maintenance records must be made available for inspection of the Engineer.

Camp Discipline

The Contractor shall take requisite precautions and use his best endeavors to prevent any riotous or unlawful behavior by or amongst his workmen, and others, employed directly or through sub-contractors. These precautions shall be for the preservation of the peace and protection of the inhabitants and security property in the neighborhood of the Works. In the event of the Employer requiring the maintenance of a Special Police Force at or near the site, during the tenure of the work, the expenses thereof shall be borne by the Contractor and if paid by the Employer, shall be recoverable from the Contractor. The sale of alcoholic drinks or other intoxicating drugs or beverages upon the work, in any labour camp, or in any of the buildings, encampments or tenements owned or occupied by, or within the control of, the Contractor or any of his employees directly or through subcontractors employed on the work, shall be forbidden, and the Contractor shall exercise his influence and authority to secure strict compliance with this condition. The Contractor shall also ensure that no labour or employees are permitted to work at the site in an intoxicated state or under the influence of drugs. The Contractor shall remove from his camp such labour and their families, as refuse protective inoculation and vaccination when called upon to do so by the Engineer on the advice of the Medical Authority. Should Cholera, Plague or any other infectious disease

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break out, the Contractor shall at his own cost burn the huts, bedding, clothes and other belongings of or used by the infected parties. The Contractor shall promptly erect new huts on healthy sites as required by the Employer, within the time specified by the Employer, failing which the work may be done by the Employer and the cost recovered from the Contractor.

Labour Accommodation

The Contractor shall provide living accommodation that is equal to or exceeds the minimum criteria established in the following sub-sections, needed to house his staff, workers employed directly or through sub-contractors. The buildings shall be constructed to have a minimum life of not less than the length of the Contract.

- a. The roofs shall be watertight and laid with suitable non-flammable materials permissible for residential use under local regulations and for which the consent of the Engineer has been obtained.
- b. Each hut shall have suitable ventilation. All doors, windows, and ventilators shall be provided with security leaves and fasteners. Back-to-back units may be avoided.
- c. The minimum height of each unit shall be 2.10m and shall have separate cooking place.
- d. Suitable no. of common toilet/bath shall be provided.

Water Supply

The Contractor shall provide an adequate supply of water for the use of labourers in the Camp. The provision shall not be less than two gallons of pure and wholesome water per head per day for drinking purposes and three gallons of clean water per head per day for bathing and washing purposes. Where piped water supply is available, supply shall be at stand posts and where the supply is from wells or river, tanks which be of metal or masonry shall be provided. The Contractor shall also at his expense plan for the provision and laying of water pipe lines from the existing mains wherever available and shall pay for all the fees and charges thereof.

Drainage

The Contractor shall provide efficient arrangements for draining away sewage water to keep the camp neat and tidy. Surface water shall be drained away from paths and roads and shall not be allowed to accumulate into ditches or ponds where mosquitoes can breed.

Sanitation

The Contractor shall arrange for conservancy and sanitation in the labour camps according to the rules and regulations of the Local Public Health and Medical Authorities. The Contractor shall provide a sewage system that is adequate for the number of residents in the camp, and which meets the requirements of the Municipality Authorities.

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5. Section 5: Special Conditions of Contract (SCC)

SCC Clause	Reference to GCC Sub-Clause No.	Description
1	Sub-Clause 3.2	<p>Functions of Engineer</p> <p>In addition to the duties mentioned in Clause 3.2 of General Conditions of Contract:</p> <p>(i) Shall watch and inspect the Works, monitor and examine any material to be used and workmanship employed by the Contractor in connection with the Works;</p> <p>(ii) Shall carry out such duties and exercise such powers vested in the Engineer in accordance with the provisions of the Contract;</p> <p>(iii) Shall issue instructions which in his opinion are necessary for the execution of the Works; and</p> <p>(iv) May issue any other instruction which in his opinion is desirable in connection with the Works.</p> <p>In case The Engineer is employee of any agency hired by the Employer, the Engineer shall take the approval of the Employer for all technical and financial matters otherwise he shall be deemed to have taken the approval of the Employer.</p>
2	Sub Clause 4.2.1	<p>PERFORMANCE SECURITY</p> <p>This Clause is deleted in SCC & GCC Clause is applicable.</p>
3	Sub-Clause 4.4	<p>Coordination with other Contractors</p> <p>The contractor shall plan and execute work in coordination and in co-operation with other contractors working for adjacent.</p>
4	Sub-clause 4.5	<p>Sub-contractors</p> <p>The work should not be sublet.</p>
5	Sub-Clause 4.10	<p>Sufficiency of Tender</p> <p>The Bidder shall be entirely responsible for sufficiency of rates quoted by him in his tender.</p> <p>The Contractor (Successful Bidder) shall be paid for only at quoted/accepted rates for the items of works executed as per BOQ.</p>
6	Sub-Clause 4.11	<p>Access Route</p> <p>All operations for the execution of the Works shall be carried out so as not to interfere unnecessarily with the convenience of the public or the access to public or private roads or footpaths or properties owned by the Employer or by any other person.</p> <p>The Contractor shall select routes, choose and use vehicles so that movement of Contractor's Equipment, Plant and Materials from and to the Site is limited so that traffic is not delayed and damage to highways and bridges is prevented. If there is any delay or damage or injury, the cost of rectification or reconstruction of highways or bridges shall be borne by the Contractor. The Contractor shall indemnify the Employer in respect of all claims, demands, proceedings, damages, costs, charges and expenses whatsoever arising out of or in relation to any such matters</p>
8	Sub-Clauses 4.16 and 6.7	<p>Safety Precautions</p> <p>The Contractor is required to make himself aware of all the requirements of the Employer's Safety, Health and Environmental Manual in this regard and comply with them. The Site Safety Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with Sub-Clauses 4.16 and 6.7 of General Conditions of Contract.</p>

SCC Clause	Reference to GCC Sub-Clause No.	Description
		<p>The Contractor shall, from time to time and as necessary or required by the Engineer, produce supplements to the Site Safety Plan such that it is at all times a detailed, comprehensive and contemporaneous statement by the Contractor of his site safety and industrial health obligations, responsibilities, policies and procedures (under the laws of India) or as stated in the Contract or elsewhere relating to work on Site If at any time the Site Safety Plan is, in the opinion of the Engineer, insufficient or requires revision or modification to ensure the security of the Works and the safety of all workmen upon, and visitors to the Site, the Engineer may instruct the Contractor to revise the Site Safety Plan. The Contractor shall, within 14 days, submit the revised plan to the Engineer for review.</p>
9	Sub-Clause 4.17	<p>Protection of the Environment The Contractor shall maintain ecological balance by preventing deforestation, water pollution and defacing of natural landscape. The Contractor shall, so conduct his cleaning operations, as to prevent any avoidable destruction, scarring or defacing of natural surroundings in the vicinity of work. In respect of ecological balance, the Contractor shall observe the following instructions</p> <p>(a) Where destruction, scarring, damage or defacing may occur as a result of operations relating to construction and maintenance activities, the same shall be repaired, replanted or otherwise corrected at Contractor's expense. All work areas shall be smoothed and graded in a manner to confirm to natural appearance of the landscape as directed by the Engineer.</p> <p>(b) All trees and shrubbery, which are not specifically required to be cleared or removed for cleaning purposes, shall be preserved and shall be protected from any damage that may be caused by Contractor's cleaning operations and equipment. The removal of trees or shrubs will be permitted only after prior approval by the Engineer. Trees shall not be used for anchorage. The Contractor shall be responsible for injuries to trees and shrubs caused by his operations. The term "injury" shall include, without limitation, bruising, scarring, tearing and breaking of roots, trunks or branches. All injured trees and shrubs shall be restored as nearly as practicable, without delay, to their original condition at Contractor's expenses.</p> <p>(c) The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer and the Employer to monitor and conduct tests to verify that the Site Environmental Plan is being properly and fully implemented</p>
10	Sub-Clause 4.18	<p>Electricity and Water Electricity and water shall be arranged by the contractor on his own and at his cost.</p> <p>If available, the Employer may provide Water supply and Electricity on chargeable basis. The contractor shall make his own arrangements to tap the Electricity from the nominated and existing sockets/ points. The contractor shall tap the Electricity as per IE Rules & IE Act (Latest) duly complying all safety precautions and under following conditions:</p>

SCC Clause	Reference to GCC Sub-Clause No.	Description
		<p>(a) The contractor shall submit full scheme for the requirement of Electricity & water. If scheme mentions Electricity requirement which is beyond the capacity of the Employer, in that case the contractor shall make his own arrangements/ alternative arrangements.</p> <p>(b) The Contractor should make his own arrangements to draw the water from the available water point to the working place without affecting the premises</p>
11	Sub-Clause 4.19	<p>Employer Supplied Machinery and Materials The <i>Employer will not provide</i> any machinery or materials under the Contract.</p>
12	Sub Clause 4.27	<p>Security of the Site The Contractor shall take all measures necessary to ensure such security, including exercising control over all persons and vehicles which are employed or engaged on the Site or in connection with the Works or the other works comprising the Project and with the security arrangements applicable to any other site within the Project.</p> <p>The Contractor shall arrange the issue of passes for the admission of all persons and vehicles to the Site or to any part thereof and may refuse admission to or remove from the Site any person or vehicle failing to show an appropriate pass on demand to any duly authorised person.</p> <p>If required by the Engineer, the Contractor shall submit a list identifying all persons to whom passes have been issued together with two photographs of each person and all entities to which a pass has been issued in respect of any vehicle and shall satisfy the Engineer of the bonafides of any such person or entity.</p> <p>The Contractor shall not, without the written permission of the Engineer or otherwise in accordance with the Contract, allow access to the Site to any person unless the presence on Site of such person is necessary in connection with the execution of the Works or with the discharge of the duties of any relevant authority.</p> <p>For the purposes of this Clause only, "Site" shall include off-Site places of manufacture or storage and the Contractor's Work Areas and shall include, areas provided to the Contractor by others.</p>
13	Sub-Clause 5.3	<p>Submission of Documents The Contractor shall submit scheme of work, documents, as required by the Contract, to the Engineer in accordance with any submittal schedule agreed with the Engineer. This submittal shall be made sufficiently before the Works are to be carried out to give the Engineer and the Employer reasonable time to examine the drawings or other documents, to prepare comments and for any changes to be accommodated by the Contractor.</p> <p>Where the consent of the Engineer is required, the Engineer shall notify the Contractor in writing of his decision either within such period as may expressly be stipulated in the Contract or otherwise within a reasonable time.</p> <p>The Operation and Maintenance Manuals and drawings submitted by the Contractor shall, if required, be updated by him during the Defects Liability Period</p>

SCC Clause	Reference to GCC Sub-Clause No.	Description
		and re-submitted for review by the Employer's Representative.
15	Sub-Clause 6.4	<p>Labour Laws The Contractor shall, if required by the Employer, deliver to the Engineer or to his office; a return in detail, in such form and at such intervals as the Employer may prescribe, showing the number of labours employed in different categories by the Contractor for the entire work.</p> <p>The contractor must ensure compliance of all the labour laws including obtaining labour licence and registration of workers with BOCW Board.</p>
16	Sub-Clause 6.6	<p>Housing Facilities The Contractor shall have to make his own arrangements for housing facilities for his staff.</p>
17	Sub-Clause 6.7	<p>Health and Safety Contractors are required to take care of his labour/site staff working at site if any mishappening occurred.</p>
18	Sub Clause 7.0	<p>Quality Control The Contractor shall appoint a suitably qualified and experienced person, not otherwise engaged in the performance of the Contract, to act as manager of the quality assurance system and shall provide such other personnel and resources as required to ensure effective operation of the quality assurance system. The said manager shall carry out audits of the application of the quality assurance system and ensure effective quality control and delivery of quality assurance.</p> <p>The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer to carry out surveillance visits both on and off the Site to verify that the quality assurance system is being properly and fully implemented. No extra payment shall be made in this regard and the cost of the Work under this element shall be deemed to be included in the Contract Price.</p>
19	Sub Clause 10.1	<p>Defect liability period The Defect liability period (DLP) shall be 12 months from the date of issue of completion certificate for the whole of the works.</p> <p>Work by persons other than the Contractor. If by reason of any accident or failure or other event occurring to, in, or in connection with the Works any remedial or other work shall, in the opinion of the Engineer, be urgently necessary and the Contractor is unable or unwilling at once to do such remedial or other work, the Engineer may authorise the carrying out of such remedial or other work by a person other than the Contractor. If the remedial or other work so authorised by the Engineer is work, which, in the Engineer's opinion, the Contractor was liable to do under the defect liability period Contract, all expenses properly incurred in carrying out the same shall be recoverable by the Employer from the Contractor, provided that the Engineer shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof in writing.</p>
20	Sub-Clause 11.1 Sub-Clause	<p>Contract Price & Payment</p> <p>In respect of All-Inclusive Contract The Contract Price, subject to any adjustment thereto in accordance with the</p>

SCC Clause	Reference to GCC Sub-Clause No.	Description
	<p>11.1.1</p> <p>Sub-Clause 11.1.4</p>	<p>contract conditions, shall be all inclusive (including all taxes, duties, royalties etc.)</p> <p>Change in Taxes Duty</p> <p>(a) "Change in Taxes/Duties/Levies" means the occurrence or coming into force of the following, at any time after the date of submission of tender.</p> <p>(i) Any new tax which is imposed on Composite Works Contractors applicable on Metro Project.</p> <p>(ii) Change in the rate of GST on Composite Works Contractors applicable on Metro Project as Per GST Act.</p> <p>(b) The Contract Price shall be adjusted due to any of the above two conditions. Adjustment in contract price will be applicable up to the stipulated date of completion of work including the extended period of completion where such extension has been granted under sub clause 8.4.1 of GCC or it is specifically mentioned that extension is with adjustment for changes as stated above.</p> <p>(c) If the extension of contract period is on account of contractor's fault under Sub-clause 8.4.3 of GCC, no compensation shall be made towards upward revision towards "change in Taxes/Duty (taking place during the said extended contract period)" as mentioned at Sl. No. (a) (i) & (ii) above, during the original contract period or extended contract period shall be on employer's account.</p> <p>(d) Any other changes (except on account of clause (a) (i) & (ii) above) in existing taxes/new taxes on supply of materials/services/works etc. will not be considered and its impact shall be considered covered in the price variation clause provided in the Contract and in Contract where Price Variation clause is not provided, the impact on any other change (except on account of clause (a) (i) & (ii) above) in existing taxes/new taxes on supply of materials/services/works etc. will be deemed to be included in the quoted contract price.</p> <p>(e) Also, the contract price shall not be adjusted on account of fluctuations in the rates of exchange between the foreign currencies of the contract and Indian rupees from the last date of submission of tender.</p>
21	Sub clause 11.1.3	<p>Price Variation</p> <p>This is a fixed price contract and no Price Variation is admissible in this contract.</p>
22	Sub-Clause 11.2	<p>Advance</p> <p>No Advance is admissible in this contract.</p>

23	Sub-Clause 11.6	<p>Payment For the purpose of On-account payment, the contractor shall submit detailed activities carried out as per BOQ recorded in Measurement sheets, Abstract sheets along with recorded bill for the item actually executed for checking and payment. Payment will be affected based on unit rates as approved in the Bill of Quantities.</p>
SCC Clause	Reference to GCC Sub-Clause No.	Description
		<p>Payment Installments and ratio: a) Scheme approval and delivery of units: 50% of the cost may be released after successful delivery for materials on site to the satisfaction of engineer in-charge along with delivery challan. b) Installation and testing and commissioning: 50% of the charges may be released after successful installation & commissioning of items as per direction of E/I.</p> <ul style="list-style-type: none"> • Equipments layout drawing(s) & manuals with material, specification giving complete details of the entire equipments. Electrical drawings for the entire electrical equipments showing cable sizes, equipment capacities, switch-gear's ratings, control components, control wiring etc.
24	Sub-Clause 15.0	<p>Insurance</p> <p>(a) All the contractor's employees drawing monthly wages up to ₹21,000/- or as applicable as per the enhanced limit, shall have to be covered under ESI. The Contractor shall take insurance policy as specified in the Employee's Compensation Act only for those employees who are not covered by ESI.</p> <p>(b) The contractor shall insure against liability to third parties in the joint name of the Employer and the contractor for any loss, damage, death or injury which may occur to any physical property (except things insured otherwise) or any person (except person insured by employer, staff of other contractor working in the premises, contractor's staff under sub clause above which may arise out of the performance of the contract. The insurance shall be at least for the amount of INR 7,50,000/- for each incident.</p> <p>(c) Insurance cover for Contractor's All Risk shall be full value of Contract price.</p>
25	Sub-Clause 18.1	<p>Notices and Instructions</p> <p>The Contractor shall furnish to the Employer/Engineer the postal address of his office at Delhi NCR. Any notice or instructions to be given to the Contractor under the terms of the contract shall be deemed to have been served on him if it has been delivered to his authorized agent or representative at site or if it has been sent by registered post to the office, or to the address of the firm last furnished by the Contractor.</p> <p>The Contractor shall establish an office in the Delhi NCR in consultation with the in charge for planning, co-ordination and monitoring the progress of the Work and intimate the same in writing to in charge. In addition, the Contractor may set up field offices at convenient and approved locations for co-ordination and for monitoring the progress of fieldwork at his own cost.</p>

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

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	Additional	GENERAL CONDITIONS OF CONTRACT a. This contract will be governed by NMRC's General Conditions of Contract and Special Conditions of Contract. The later will have priority over the earlier one in case of any ambiguity in any of the clause. b. All conditions mentioned in the General Conditions of Contract (GCC) will be applicable in addition to above.
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6. Section 6: Technical Specifications

Stabilizer Linear Type

All equipment's and material shall be designed manufactured and tested in accordance with the latest applicable IEC standards. **All equipment and material shall be designed manufactured and tested in accordance with the latest applicable IEC standards.**

CONFORMITY WITH STATUTORY ACTS, RULES, REGULATIONS, STANDARDS AND SAFETY CODES

- a) Indian Electricity Act and Rules All electrical works in connection with installation of electric sub-stations shall be carried out in accordance with the provisions of Indian Wherever I.E. rule numbers have been indicated, they are based on I.E. Rules, 1956 amended up to date.
- b) CPWD Specifications:- The electrical works shall also conform to CPWD General Specifications for Electrical Works Part I (Internal) 2013 and Part II (External)1994, Part-IV substation 2013 as amended up to date wherever relevant I.E. Rules, BIS/IEC and as per directions of In-charge. These additional specifications/ conditions are to be read in conjunction with above and in case of variations; specifications given in the in the contract shall apply. However, nothing extra shall be paid on account of these additional specifications and conditions, as the same are to be read along with schedule of quantities for the work.
- c) The servo-stabilizer offered shall in general comply with the latest issues including amendments of the following standards.

Title	Standards
High Voltage Low Voltage Pre-Fabricated Substation	IEC:61330/62271-202
High Voltage Switches	IEC 60265
Metal Enclosed High Voltage Switchgear	IEC 60298/62271-200
High Voltage Switchgear	IEC 60694/62271-100
Low Voltage Switchgear and Control gear	IEC 60439/60947
Transformers	IEC 60076
Servostablizer	IS 9815, 2026,m IEC/UNE-EN 61558-1, IEC/UNE-EN 61439-1& as per IS standard

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Details	Specifications	To be confirmed by Bidder
Capacity	500 KVA	
Type	Self-lubricating Carbon Roller Assemblies suitable for unbalanced load	
Output Line Voltage	415 Volts +/- 1% for input line voltage of (332-498 volt) i.e. 240 volt with +/-20% fluctuations	
Output Phase Voltage	240 volt +/- 1% for input phase voltage of (192-288) volt i.e. 240 volt with +/-20% fluctuations	
Output voltage range	If input phase voltage is less than 192 volt or more than 288 volt, output voltage should be as close as possible to 240 volt. However, under any circumstances, output voltage should not be below or more than above rated voltage. The stabilizer can be disconnected if the output voltage differ from above mentioned range.	
Type	Suitable for Unbalanced	
Phase	3-Ph, 4 Wire	
Frequency	50 Hz	
Cooling	Oil Cooled	
Mode of Operation	Automatic/Manual	
CORE	CRGO M4 Grade	
Copper	Electrolytic Grade	
Rate of correction	(7-8)Volts / Sec	
Temp. Rise at 100% load	35°C Deg. Cent. Above Ambient	
Winding Temp. Rise	40°C Deg.	
Application	OUTDOOR TYPE	
Transformer Oil	IS 335 making	
Output Accuracy	+/- 1% from No load to full load	
Response Time	20 milli seconds	
Overload Capacity	Shall withstand 50% over Load for 30 seconds & 75% overload for 10 Seconds.	

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Wave Form Distortion	Should be Nil	
Losses at No Load	Less than 0.25% of the total capacity	
Losses on load	As per IS norms	
Metering	Analog Metering for Phase & Current flow	
Terminations	Aluminium Box Aluminium Bus Bars to be provided In the Termination Box	
Expected Working Life	>15- 20 years	
Control Panel	Suitable Controller with display of the various parameters and selector switch controlled bypass arrangement	
Protections	<ol style="list-style-type: none"> 1.Cut-Off with alarm 8 window annunciation 2.Input High voltage 3.Input Low Voltage 4.Output Overload 5.Surge Protection 6.Single phase preventer 7. Reverse phase protection 8. Short Circuit & Earth fault protection. 	
Effect of unbalance on Neutral	Should be nil	
Standards applicable	IS:9815	
Warranty	3 years from the date of Commissioning	
LT Panel Provision	<ol style="list-style-type: none"> 1. <i>Bypass Arrangement - Using a suitable FP ACB. In case of maintenance of the servo, we have to safely bypass the servo so that the supply to the unit is restored.</i> 2. Annunciation of the faults 3. Communication capable metering to monitor the incoming and outgoing parameters 4. Aluminium Bus with Panel fabricated in 14/16SWG CRCA sheet 5. Suitable earthing arrangement along the length of the Panel. 6. Doors to be earthed using green/yellow coloured wire 7. Control cabling to be wired using 2.5sqmm copper. 8. Panel shall be powder coated with RAL7035 	

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

STANDARD FITTINGS / ACCESSORIES SUPPLIED WITH SERVO VOLTAGE STABILIZER

S. No.	DESCRIPTION	QTY
01.	Name, Rating & Terminal Marking Plate	
02.	Thermometer Pocket	
03.	Plain Unidirectional CI Rollers	
04.	Lifting Lugs.	
05.	Earthing Terminals	
06.	Plain Oil level gauge	
07.	Control Panel	
08.	Automatic Module	
09.	Cooling Radiators	

NOTE

1) The contractors must have to submit G.A. diagram control circuit diagram indicating the make of all components for getting approval from the Institute before placing order. They are also to arrange the factory inspection of the stabilizer before delivery at site.

2) The contractor has to undertake minor civil works for installation of the voltage Stabilizer at site as per site requirement.

3) Cables and terminations

Supply & laying of 1.1 kV grade as per BOQ XLPE insulated PVC sheathed cable and termination of above cable. Approval of LV suitable for above and as per E/I instruction cable shall be as be submitted before ordering.

Statutory approval

All necessary statutory approvals shall be taken by the contractor. The employer shall facilitate only.

Description	TYPE OF TEST			
	Type	Routine	On Site	Special
Temperature rise*	✓			
Lighting impulse withstand voltage test*	✓			
Separate-source voltage withstand test		✓	✓	
Measurement of winding resistance test		✓		
Measurement of voltage ratio and check of phase displacement		✓		
Measurement of no load loss and current		✓		
Visual inspection		✓	✓	
Short circuit withstand test				✓

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SAFETY CODE

- 1) Before any demolition work is commenced and also during the process of the work,
 - a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - b) No electric cable or apparatus which is liable to be source of danger or a cable or apparatus used by the operator shall remain, electrically charged.
 - c) All necessary steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding.
- 2) All necessary personal safety equipment as considered adequate by the Engineer-in charge should be kept available for the use of the persons employed on the site and maintained in a condition suitable for immediate use and the contractor should take adequate steps to ensure proper use of equipment by those concerned.

When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided. The worker should not wear any ring, watches and carry keys or other materials which are good conductors of electricity.
- 5) Every person who is working on an electric supply line or apparatus or both shall be provided with PPE (Personal Protective equipments).
- 6) No work on H.T main should be undertaken unless it is made dead and discharged to earth with an earthing lead of appropriate size. The discharge operation shall be repeated several times and the installation connected to earth positively before any work is started.
- 7) Before energizing of installation/after completion of work, it should be double ensured that all T&P have been removed and accounted, no person is present inside any enclosures of the switchboard etc.,
- 8) All safety devices mentioned or described herein shall be maintained in safe conditions and no equipment shall be altered or removed while it is in use.

1.1. Specifications of Electrical and other works

6.3.1. Section - I Lt Distribution Boards

Scope

This section covers specification of Distribution Boards (DBs) suitable for operation on 415 V 3 Phase 4 wire 50 Hz supply feeding final lighting and power sub circuits.

Standards And Codes

Updated and current Indian Standard Specifications and Codes of Practice will apply to the equipment and the work covered by the scope of this contract. In addition the relevant clauses of the Indian Electricity Act 2003, Indian Electricity Rules 1956, National Building Code 1997, National Electric Code 1985, Code of Practice for Fire Safety of Building (general): General Principal and Fire Grading - IS 1641 - 1988 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards **shall** be applicable.

- Miniature Circuit Breakers for AC circuits IS 8828 : 1996 & IEC 947
- Residual current operated Circuit Breakers IS 12640 : 1988
- Low voltage switchgear and control gear Part II IS 13947 : 1993
- Degrees of Protection provided by enclosures for low voltage switchgear IS 2147 : 1962
- Code of Practice for installation and maintenance of switchgear not exceeding 1000 volts IS 10118 : 1982
- General requirements for switchgear and control gear for voltages not exceeding 1000 volts IS 4237 : 1982

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- Specification for Low-voltages switchgear & control gear assembly (Part-1,2 & 3) IS 8623 : 1993

6.3.1.1. Miniature Circuit Breakers

The MCB's shall be of the completely moulded design suitable for operation at 240/415 Volts 50 Hz system. The MCB's shall have a rupturing capacity of 10 KA lcs. The MCB's shall have inverse time delayed thermal overload and instantaneous magnetic short circuit protection. The MCB time current characteristic shall coordinate with PVC cable characteristic. Watt loss per pole of MCB shall conform to value specified in IS 8828 - 1996. Type test certificates from independent authorities shall be submitted with the tender or before approval.

6.3.1.2. Testing of Cables

1. Cables shall be tested at works for the following tests before being dispatched to site by the concerned person.
 - a. Insulation Resistance Test.
 - b. Continuity resistance test.
 - c. Sheathing continuity test.
 - d. Earth test.(in armoured cables)
 - e. Hi Pot Test.
2. Test shall also be conducted at site for insulation between phases and between phase and earth for each length of cable, before and after jointing. On completion of cable laying work, the following tests shall be conducted in the presence of the Owner's site representative.
 - a. Insulation Resistance Test(Sectional and overall)
 - b. Continuity resistance test.
 - c. Sheathing continuity test.
 - d. Earth test.
3. All tests shall be carried out in accordance with relevant Standard Code of Practice and Electricity Rules. The Contractor shall provide necessary instruments, equipment and labour for conducting the above tests and shall bear all expenses in connection with such tests. All tests shall be carried out in the presence of the Owner's site representative.

6.3.1.3. Floor Cable Trunking

1. General
 - a. Trunking and fittings shall comply with BS 2989 or Indian Standard of IS277 with a GI coating thickness of 275GSM.
 - b. Trunking shall be top accessed. Inverted trunking is not acceptable.
 - c. All multi-compartment trunking systems shall maintain the stated segregation throughout, including all accessories.
 - d. Trunking shall be manufactured using pregalvanised sheet steel. Trunking shall be spot welded & arc welded throughout its length for better impact resistant and to prevent concrete seepage during installation. The trunking shall normally be supplied in 2500mm lengths with a material thickness of 1.6mm. Lengths of trunking, shall be coupled together by means of joint sleeves, made of pre galvanized GI with 275 GSM GI coating. At each joint in the trunking, continuity shall be maintained by means of copper links, not less than 25 x 3 mm to achieve an acceptable earth loop impedance level in compliance with BS

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2989, fixed with brass nuts, bolts and serrated washers. Removal of any lid no matter how it is fitted shall not affect the earth continuity of the trunking. LSZH copper cable link with cable lugs may be used, if the proper connection method is provided to avoid long term corrosion and electrolytic action. The LSZH cable shall have an equivalent cross sectional area to the copper links. Bonding link shall be fixed on external surfaces.

- e. Manufacturer's standard fittings shall be used for all connections and changes of direction. All vertical bends, Crossover boxes, access outlets, and junction boxes shall be of the same manufacturer as the trunking. Trunking shall not be cut or bent to form bends, flanges or attachments. Gusset bends shall be used wherever necessary to provide sufficient bending radius for the cables. Site fabricated items shall not be accepted.
2. The minimum size shall be 50mm by 40mm with single compartment. The maximum recommended size for the trunking is up to 300mm by 40mm with triple compartments.
3. All inside edges of trunking shall be smooth and provision shall be made to prevent abrasion at bends.
4. Cable retaining straps supplied by the trunking manufacturer shall be fitted at intervals not exceeding 1m. Where trunking passes through walls, floors and ceilings, proprietary fire barriers shall be installed in the trunking. The fire barrier shall have a rating not less than that of the original construction of the opening.
5. Trunking shall be adequately supported throughout its length. Trunking support and channel shall be quick-fixing type and shall be such as to space the trunking a minimum of 13mm from any part of the wall or bulkhead.
6. A minimum of two fixings shall be provided between joints in the trunking except where the distance between is less than the maximum spacing.
7. Where trunking is cut or drilled, the cut edges of the trunking shall be smoothed to prevent abrasion of the cables and shall be painted with anti-corrosion paint like aluminium coating, to the same colour as the adjacent surfaces, such painting to be carried out as the work proceeds. In no circumstances will rough screw edges and nuts be allowed in the interior of the trunking.
8. Flush or buried trunking and under floor metal ducts shall comply with BS 2989.
9. The space factor for cables installed in trunking shall not exceed 35% as per IEE regulations.
10. All lengths of vertical run trunking in excess of 3000mm shall contain cable supports made of insulating, non-hygroscopic, non-combustible material. The spacing between such supports shall not exceed 1800mm.
11. An additional support shall be provided at the top of all vertical runs exceeding 3000mm, to support the weight of the cable and distribute the cables within the trunking to prevent undue compression of the installation.
12. Where trunking crosses expansion joints, a trunking fitting shall be used which shall allow for expansion and maintain earth continuity.
13. Trunking installed externally shall be manufactured from galvanized sheet steel in accordance with BS 2989 protection Class 3, or other international standards. Trunking installed internally shall be of Class 2.
14. Partitions or dividers shall be of the same material and finish as the trunking. The method of fixing shall not cause any long-term corrosion or electrolytic action.
15. Connections to multiple boxes, switchgear and distribution boards shall be made with multi

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compartment vertical access boxes. Expansion joints in long continuous runs shall be provided as recommended by the manufacturer.

6.3.1.4. Access Outlets

1. Access Outlets are made of very high quality materials to withstand heavy load and corrosion.
2. Manufactured from high-pressure die cast material for strength & durability.
3. The trap frame & trap are made of flame retardant Engineering Plastic - ABS & Polyamide ratchet for strength & durability.
4. The Trap Frame can be easily removed by pulling either one of the Nylon Bars to detach & remove the unit for servicing or installation of accessories to save installation & servicing time.
5. Patented screw less ratchet bar level adjusting system to match with screed / floor height. The trap lid is self-adjustable to any floor finish thickness.
6. Trap cover must be reinforced with a 2.5mm thick pre-galvanized steel plate to provide rigidity & added strength. Trap lid to have a screw less knob-hinged design for quick mounting on to the frame requiring minimum maintenance.
7. The Trap cover must have 8 mm recessed for installation of carpet and tiles.
8. Trap trim design to protect carpet from damages and give the floor area added aesthetics.
9. Trap lid should be made of Electrostatic Polyester Epoxy Coating to provide excellent and enhanced protection on visible parts against chemical or saline corrosion.
10. Strong and durable trap lifting handle on the trap cover is made of similar color material and has special design for easy lifting, even with large fingers.
11. Cables are guided by Cable Retainers through generous cable outlet which open automatically and lock into position when cables are present.
12. Trap cover of Access box should be retained by Cable Grommets with high quality durable foam to prevent the cable damage from exit position & also prevent ingress of dust when closed.
13. Access Outlet should carry service plates for providing services i.e.: Power, Data & Telecom. The Access outlets must accommodate to have three compartments to run Mains Voltage & Extra Low Voltage cables.
14. The system must have Positive Double Earthing connections.
15. Earth wire connector should be provided in all the boxes, and complies with the requirement of current IEE regulation.
16. Access outlets are tested to a load bearing of 2 tons on the trap lid for heavy traffic areas
17. Four side blanks are made with removable perforations to suit ducts installation.
18. Standards & Approvals - The system must comply with the relevant specification & IEC 61084 standards.

6.3.1.5. Crossovers/Junction Boxes

1. Cross Overs/Junction boxes are made of very high quality materials to withstand heavy load and corrosion.
2. Manufactured from high-pressure die cast material for strength & durability.
3. The trap lid is self-adjustable to any floor finish thickness using the levelling screws on all the four corners.
4. The Trap cover is made of 2.5mm thick pre-galvanized steel plate to provide rigidity & added strength.
5. The Trap covers to have flexibility for quick mounting on to the base box requiring minimum maintenance.
6. The Trap cover must have 8mm recessed for installation of carpet and tiles.
7. The Flyover units, trap frame and traps should be made of Electrostatic Polyester Epoxy Coating to provide excellent and enhanced protection on visible parts against chemical or saline corrosion.
8. The Cross Overs should carry fly-over made of Electrostatic Polyester Epoxy Coating for cables

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passage to ensure segregation of service

9. Crossovers are tested to a load bearing of 3.6 tons on the trap lid for heavy traffic areas. The Cross Overs should have provision to Power, Data & Telecom services.
10. The system must accommodate to run Mains Voltage & Extra Low Voltage cables.
11. The trap cover screws must be made from Stainless Steel for extra protection.
12. The system must have Positive Double Earthing connections.
13. Earth wire connector should be provided in all the boxes, and complies with the requirement of current IEE regulation.
14. The complete system must have excellent protection against rust.
15. Four side blanks are made with removable perforations to suit ducts installation of up to 38-mm height.
16. The one-piece base frame design ensures minimum openings to prevent concrete seepage into the box during casting of concrete or screeding.
17. Standards & Approvals - The system must comply with the relevant specification & IEC 61084 standards.

6.3.1.6. Vertical Access Boxes

1. Vertical access boxes are made of very high quality materials to withstand heavy load and corrosion.
2. Vertical access boxes facilitate the connectivity of floor raceways to the equipment on the wall like the distribution boards, so the product should be designed as \perp shaped
3. The Vertical access boxes should have provision to carry Power, Data & Telecom services
4. The vertical access boxes should have the duct entry knockouts of up to 38mm and also provision for carrying the conduits to the wall
5. The vertical access boxes are made of electrostatic polyester epoxy coating to prevent the rust accumulation.

6.3.2. Section IV- Earthing

6.3.2.1. Scope

1. This section covers specifications for earthing systems comprising of earth electrodes, earth leads and loop earthing conductors.
2. Separate earthing systems shall be provided for neutral earthing (of transformers and generators) and body earthing.
3. All the non-current carrying metal parts of electrical installations including metal conduits, trunkings, cable armour, switchboards, DBs, light fittings and all other non-current carrying parts made of metal shall be bonded together and connected by means of specified earthing conductors to an efficient earthing system.
4. All three phase equipment shall have two separate and distinct body earths and single phase equipment shall have a single body earth.
5. Separate earth leads of appropriate size shall be provided for.
 - a. Main switchboards

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- b. UPS system earth bus
- c. Computer system earth bus
- d. Telephone system earth bus

Wherever so specified the earth lead shall be PVC sheathed to provide a clean earth.

6.3.2.2. Standards

The earthing system shall be carried out in conformity with the updated and current edition of IS 3043: 1987. In addition, relevant clauses of Indian Electricity Act 2003, India Electricity Rules 1956 and IEE Wiring Regulations (16th edition), as amended up-to-date, shall also be applicable.

6.3.2.3. Earth Electrodes

- 1. Plate Earth Electrodes: The plate electrodes shall be of copper or GI as called for in the schedule of quantities. Minimum dimensions of the electrodes shall be 600 mm x 600 mm. Thickness of copper electrodes shall not be less than 3 mm and of GI electrodes not less than 6 mm.
- 2. Pipe Earth Electrode: Pipe electrode shall be fabricated from a 40 mm dia 4500 mm long class B (medium) GI pipe. The GI pipe shall be tapered at the bottom and shall be provided with 12 mm dia holes drilled at every 75 mm.
- 3. Galvanizing: Galvanizing of Earth Electrodes and Earthing Conductors shall conform to class - IV of IS 4736: 1986.

6.3.2.4. Earth Pit

- 1. For plate electrodes: Plate electrode shall be buried in ground with its face vertical and top not less than 500 mm below ground level. The depth shall be increased if required so that permanently moist soil level is reached. The electrode shall be surrounded by alternate layers of charcoal and salt. A 20 mm dia class B GI pipe shall be provided for watering of the soil surrounding the electrode. The watering pipe shall have a watering funnel attachment with a wire mesh which shall be housed in the masonry inspection chamber. Main earth lead shall be securely terminated at the electrode by means of 2 bolts, nuts, checknuts and spring washers.

The earth lead from the electrode up to the test link in masonry chamber shall be drawn in a suitable diameter class B GI pipe for mechanical protection. The GI pipe shall be provided with a coat of bituminous paint or bituminized jute wrapping for additional corrosion protection. The lead shall terminate in a test link provided in the inspection chamber to enable the earth electrode to be isolated for measuring earth resistance.

- 2. For pipe electrodes: Pipe electrode shall be installed with its stop not less than 200 mm below ground level. The top shall be provided with a 40 mm x 20 mm reducer to fix watering funnel with mesh on top. The entire length of pipe below the inspection chamber shall be surrounded by alternate layers of charcoal and sand. Earth lead shall be provided as for plate electrode and shall be terminated using a though bolt, nuts, check nuts, spring washers etc.
- 3. Masonry inspection chamber: The watering funnel arrangement as also earth test links shall be accessible and shall be housed in a 400 mm x 400 mm x 400 mm deep masonry inspection chamber having a lockable 10 mm thick cast iron hinged cover plate attached to a galvanized steel frame work embedded in the chamber walls. The hinged cover shall be suitably marked on top so that it is conspicuously identifiable as an earth station.
- 4. Location of earth electrodes: Location of earth electrodes shall be based on following guidelines.
 - a. Minimum distance between any electrode and building structure shall be 1.5 m.
 - b. Minimum distance between two adjacent electrodes shall be 2 m.
 - c. Electrodes shall be located in accessible locations. Entrances, pavements and roads

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shall not be used for locating earth electrodes.

6.3.2.5. Earthing Conductor

Main Earth Lead

1. Interconnections between earth bus provided on the main switchboard inside the building for body earthing / neutral terminals of transformers / generators for neutral earthing and test link provided in the earth electrode inspection chamber shall be laid at minimum 300 mm depth below ground (minimum 600 mm below road crossings and paved pavements).
2. For small installations where this lead is by means of GI / copper wire, the earth lead shall be drawn in a 15 mm dia class B GI pipe. For larger installations the GI pipe size shall be suitable for drawing the earth strip. GI pipe shall be provided with a coat of bituminous paint on the outside for minimizing corrosion. In locations where GI pipe protection cannot be provided, the earth conductor shall be wrapped with bituminous jute wrapping. Earthing conductors
3. Earthing conductors shall be connected to form the earthing network throughout the installation for earthing of all non-carrying metal parts as below. Materials and sizes shall be as per schedule of quantities
 - a. Main earthing conductors shall be taken from the earth connections at the main switchboards to all other switchboards in the network.
 - b. Sub-mains earthing conductors shall run from the main switchboard to the sub distribution boards and to the final distribution boards.
 - c. Loop earthing conductors shall run from the distribution boards and shall be connected to any point on the main/sub-main earthing conductor, or its distribution board or to an earth leakage circuit breaker.
 - d. Conduiting systems and cable armouring shall be earthed at the ends adjacent to switchboards at which they originate, or otherwise at the commencement of the run by separate loop earthing conductors in effective electrical contact with cable armour, switch boxes, accessories, lighting fitting etc.

Installation and Jointing of earthing conductors

4. Earthing conductors shall be provided in longest possible unbroken length to minimize jointing of the conductors in between terminations.
5. Strip conductors shall be secured to the building walls etc. with appropriate size of saddles at intervals not exceeding 900 mm. The saddle shall be gun metal for copper and GI for GI strips.
6. Copper earth strips shall be joined by butt welding /brazing or the mating surfaces shall be tinned, riveted and soldered.
7. GI earth strips shall be joined by GI bolts, nuts, checknuts and spring washers of appropriate size.
8. All exposed joints shall be provided with 2 coats of anti-corrosive paint.
9. Wires shall be joined by means of lugs of appropriate size connected by bolts, nuts, checknuts and washers. If the connection is on a painted surface, the paint shall be thoroughly removed and the metal exposed for making effective electrical contact. Lugs and bolts shall be of brass for copper wires and for GI wires.

6.3.2.6. Prohibited Connections

Neutral conductor, sprinkler pipes, or pipes conveying gas, water, or inflammable liquid, structural steel work, metallic enclosures, metallic conduits and lighting protection system conductors shall not be used as a

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means of earthing an installation or even as a link in an earthing system.

6.3.2.7. Resistance To Earth

1. No earth electrode shall have a greater ohmic resistance than 3 ohms as measured by an approved earth testing apparatus. In rocky soil the resistance may be up to 5 ohms.
2. The electrical resistance measured between earth connection at the main switchboard and any other point on the completed installation shall be low enough to permit the passage of current necessary to operate circuit breakers, and shall not exceed 1 ohm.

6.3.2.8. Maintenance Free Earthing Electrode System/ Chemical Earthing

1. In maintenance free earthing copper bonded earthing rod electrode shall be of minimum 14.35 mm in diameter and 3 meter length. The rod shall be placed in a 150 mm dia an augured hole in the ground and then surrounded by ground enhancement material in either a dry form or pre mixed in a slurry. Once set, ground enhancement material becomes hard and as such holds positively to the rod as well as surrounding ground. Earth rod offered shall have passed the test required of BS7430/ ANSI/ UL467 and confirm to the adhesion of the copper coating to the steel core (Design feature that prevents the ingress of moisture and subsequently the integrity of the rod).
2. Minimum 0.25 mm thickness of copper shall be deposited over the steel core as per BS 7430/ UL 467. Average life of the ground rod shall be 30 years in most soil.
3. Ground enhancement material shall be as per IEEE-80 clause 14.5d with a resistivity of less than 0.12 ohm-meter. The ground enhancement material shall be permanent and not leach any chemicals in to the ground.
4. Minimum 30 Kg of ground enhancement material shall be provided for each earth electrode.
5. Inspection chamber shall be of 400 x 500 mm with concrete base CI manhole cover with frame painted with bitumastic paint. 2 Nos. of 50 x 6 mm cross section & 300 mm long copper strip to be clamped with copper claded rod electrode have sufficient nos (But not less than 4 Nos.) of 10□ mm GI nuts & bolts for connection to the equipment / interconnection to the other pits to form equi-potential bonding.

6.3.2.9. Testing At Site

1. Testing Of Earth Continuity Path: The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.
2. Earth Resistivity Test: Earth resistivity test shall be carried out in accordance with IS Code of Practice for earthing IS 3043.

6.3.2.10. Routine and completion tests

1. Installation Completion Tests

At the completion of the work, the entire installation shall be subject to the following tests:

- i. Wiring continuity test
 - ii. Insulation resistance test
 - iii. Earth continuity test
 - iv. Earth resistivity test
2. Besides the above, any other test specified by the local authority shall also be carried out. All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the contractor at his own cost.

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3. Wiring Continuity Test

All wiring systems shall be tested for continuity of circuits, short circuits, and earthing after wiring is completed and before installation is energized.

4. Insulation Resistance Test

The insulation resistance shall be measured between earth and the whole system conductors, or any section thereof with all protection in place and all switches closed and except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it does not exceed 1100 volts for LT circuits. Where the supply is derived from AC three phase system, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the neutral.

5. The insulation resistance measured as above shall not be less than 50 megohms divided by the number of points provided on the circuit the whole installation shall not have an insulation resistance lower than one megohm.

6. The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and shall be carried out after removing all metallic connections between the two poles of the installation and in those circumstances the insulation shall not be less than that specified above.

7. The insulation resistance between the frame work of housing of power appliances and all live parts of each appliance shall not be less than that specified in the relevant Standard specification or where there is no such specification, shall not be less than half a megohm or when PVC insulated cables are used for wiring 12.5 megohms divided by the number of outlets. Where a whole installation is being tested a lower value than that given by the above formula subject to a minimum of 1 Megohms is acceptable.

6.3.2.11. Testing of earth continuity path

The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

6.3.2.12. Testing of polarity of non-linked single pole switches

In a two wire installation a test shall be made to verify that all non-linked single pole switches have been connected to the same conductor throughout, and such conductor shall be labelled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply. In the three or four wire installation, a test shall be made to verify that every non-linked single pole switch is fitted to one of the outer or phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance of the Engineer-in-Charge as well as the local authorities.

6.3.2.13. Earth resistivity test

Earth resistivity test shall be carried out in accordance with IS Code of Practice for earthing IS 3043.

6.3.2.14. Performance

Should the above tests not comply with the limits and requirements as above the contractor shall rectify the faults until the required results are obtained. The contractor shall be responsible for providing the necessary instruments and subsidiary earths for carrying out the tests. The above tests are to be carried out by the contractor without any extra charge.

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6.3.2.15. Tests and test reports

The Contractor shall furnish test reports and preliminary drawings for the equipment to the Engineer- in Charge for approval before commencing supply of the equipment. The Contractor should intimate with the tender the equipment intended to be supplied with its technical particulars. Any test certificates etc., required by the local Inspectors or any other Authorities would be supplied by the Contractor without any extra charge. All test reports shall be approved by the Engineer-in-Charge prior to energizing of installation.

6.3.3. Section – VI: Cabling For Voice, Data System

6.3.3.1. Scope

This document defines the cabling system and subsystem components to include cable, termination hardware, supporting hardware, and miscellany required to furnish, and to install a complete cabling infrastructure supporting voice and video. The intent of this section is to provide pertinent information to allow the vendor to bid the labour, supervision, tooling, materials, and miscellaneous mounting hardware and consumables to install a complete system. However, it is the responsibility of the vendor to propose any, and, all items required for a complete system whether or not it is identified in the specification, drawings and bill of materials attached to this specification.

6.3.3.2. Applicable documents

The cabling system described in this specification is derived in part from the recommendations made in industry standard documents. The list of documents below (or the latest revisions) has bearing on the desired cabling infrastructure are incorporated into this specification by reference:

- a. This Technical Specification and Associated Drawings
- b. ANSI/TIA/EIA 568-B Commercial Building Telecommunications Cabling Standard - March 2001
- c. ANSI/EIA/TIA-569-A Commercial Building Standard for Telecommunications Pathways and Spaces - February, 1998
- d. ANSI/EIA/TIA-606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings - February, 1993
- e. ANSI/TIA/EIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications - August, 1994

Section - VIII: LT Switchboards

6.3.8.1. General

This section covers specification of LT Switchboards

6.3.8.2. Standards and codes

Updated and current Indian Standard Specifications and Codes of Practice will apply to the equipment and the work covered by the scope of this contract. In addition the relevant clauses of the Indian Electricity Act 2003, Indian Electricity Rules 1956, National Building Code 2005, National Electric Code 1985, Code of Practice for Fire Safety of Building (general): General Principal and Fire Grading - IS 1641 - 1988 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable.

Low Voltage switchgear & control gear IS/IEC 60947

Part I: General rules

Part II: Circuit Breakers

Part III: Switches, disconnectors, Switch disconnectors and fuse combination units Part

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IV: Contactors and Motor starters

Part V: Control circuit devices and switching elements

Marking of Switchgear busbars	IS 11353: 1985
Degree of Protection of Enclosures for low voltage switchgear.	IEC 60529
Electrical relays for power system protection	IS 3231: 1986
Code of Practice for selection, installation and Maintenance of switchgear & control gear IS 10118: 1982	
Low voltage switchgear & control gear assemblies	IEC 60349
Danger notice plates	IS 2551: 1982

6.3.8.3. Moulded Case Circuit Breaker (MCCB)

1. The MCCB should be current limiting type with trip time of less than 10 msec under short circuit conditions. The MCCB should be either 3 or 4 poles as specified in BOQ. MCCB shall comply with the requirements of the relevant standards IEC 60947-2 and should have test certificates for Breaking capacities ($I_{cs}=I_{CU}=100\%$) from independent test authorities CPRI / ERDA or any accredited international lab.
2. MCCB shall comprise of Quick Make -break switching mechanism, arc extinguishing device and the tripping unit shall be contained in a compact, high strength, heat resistant, flame retardant, insulating moulded case with high withstand capability against thermal and mechanical stresses
3. The breaking capacity of MCCB shall be as specified in the schedule of quantities. The rated service breaking capacity (I_{cs}) should be equal to rated ultimate breaking capacities (I_{cu}). MCCBs for motor application should be selected in line with Type-2 Co-ordination as per IEC60947-2, 1989/IS 13947-2. The breaker as supplied with ROM should meet IP54 degree of protection.
4. MCCB shall be suitable for positive Isolation as per IEC 60947-2
5. MCCB shall comply with Class-II front facia as per IEC61140
6. MCCB shall be provided with continuously ratio coils.
7. MCCB shall have cross bolted termination.

6.3.8.4. Current Limiting & Coordination

1. The MCCB shall employ maintenance free minimum let-through energies and capable of achieving discrimination up to the full short circuit capacity of the downstream MCCB. **The manufacturer shall provide both the discrimination tables and let-through energy curves for all. It shall be responsibility of Panel builder & OEM to carry out the discrimination study at the time of drawing approval.**
2. Protection Functions
 - a. MCCBs with ratings up to 250 A shall be equipped with Thermal-magnetic (thermal for overload and magnetic for short-circuit protection) trip units
 - b. Microprocessor MCCBs with ratings 250A and above shall be equipped with microprocessor based trip units. (both variable setting)
 - c. Microprocessor and thermal-magnetic trip units shall be adjustable and it shall be possible to fit lead seals to prevent unauthorized access to the settings

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- d. Microprocessor trip units shall comply with appendix F of IEC 60947-2 standard (measurement of rms current values, electromagnetic compatibility, etc.)
- e. Protection settings shall apply to all poles of circuit breaker.
- f. All Microprocessor components shall withstand temperatures up to 125 °C

6.3.8.5. Testing

1. Original test certificate of the MCCB as per IEC 60947-1 & 2 or IS13947 shall be furnished.
2. Pre-commissioning tests on the switch board panel incorporating the MCCB shall be done as per standard specifications.

6.3.8.6. Interlocking

Moulded, case circuit breakers shall be provided with the following interlocking devices for interlocking the door of a switch board.

1. Handle interlock to prevent unnecessary manipulations of the breaker.
2. Door interlock to prevent the door being opened when the breaker is in ON position.
3. Defeat-interlocking device to open the door even if the breaker is in ON position.
4. The MCCB shall be current limiting type and comprise of quick make - Break switching mechanism. MCCBs shall be capable of defined variable overload adjustment. All MCCBs rated 250 Amps and above shall have adjustable over load & short circuit pick-up both in Thermal magnetic and Microprocessor Trip Units.
5. All MCCB with microprocessor based release unit, the protection shall be adjustable Overload, Short circuit and earth fault protection with time delay.
6. The trip command shall override all other commands.

6.3.9. Section IX: Switchboards

6.3.9.1. General

1. Switchboards shall be suitable for operation at three phase 4 wire, 415 volt, 50 Hz, neutral solidly grounded at transformer system with a short circuit level withstand as per schedule of quantities and drawings.
2. Switchboards shall comply to Form 3B for compartmentalized boards and Form 1 for non compartmentalized boards as per BS 5486 Part I - 1990 and IEC 439-1
3. The enclosures shall be designed to take care of normal stress as well as abnormal electromechanical stress due to short circuit conditions. All covers and doors provided shall offer adequate safety to operating persons and provide ingress protection of IP 54 unless otherwise stated. Ventilating openings and vent outlets, if provided, shall be arranged such that same ingress protection of IP 54 is retained. Suitable pressure relief devices shall be provided to minimize danger to operator during internal fault conditions.
4. Entire switchgear used in switchboards shall be completely fuse free. No fuses shall be used anywhere in the installation.
5. All accessible bare terminals shall be provided with integral shrouds and shall be finger touch proof.
6. Bimetallic connectors shall be provided for termination of cable with aluminium conductors on copper bus bars.

6.3.9.2. Switchboard Configuration

1. The Switchboard shall be configured with Air Circuit Breakers, MCCB's, and other equipment as called for in the schedule of quantities.
2. The MCCB's shall be arranged in multi-tier formation whereas the Air Circuit Breakers shall be

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arranged in Single or Double tier formation only to facilitate operation and maintenance.

3. The Switchboards shall be of adequate size with a provision of 25% spare space to accommodate possible future additional switch gear.

6.3.9.3. Equipment Specifications

All equipment used to configure the Switchboard shall comply with the relevant Standards and Codes of the Bureau of Indian Standards and to the detailed technical specifications as included in this tender document.

6.3.9.4. Constructional Features

1. The Switchboards shall be metal clad totally enclosed, floor mounted free standing type of modular extensible design suitable for indoor mounting. The Switchboards shall be designed for a temperature rise restricted to 40 Deg C above ambient of 45 Deg C
2. Switchboards shall be either compartmentalized or non-compartmentalized as stipulated in schedule of quantities.
3. Switchboards shall be made up of requisite vertical sections, which when coupled together, shall for continuous dead front switchboards.
4. Switchboard shall be readily extensible on both sides by addition of vertical sections after removal of the end covers.
5. The switchboards shall be designed for use in high ambient temperature and humid tropical conditions as specified. Ease of inspections, cleaning and repairs while maintaining continuity of operation shall be provided in the design.
6. Metal based neoprene gaskets between all adjacent units and beneath all covers shall be provided to render the joints dust and vermin proof to provide a degree of protection of IP 54 as stipulated in schedule of quantities.
7. _U_ Channels forming switchboard frames shall be fabricated from 2.5 mm thick electro galvanized MS sheets. All joints shall be neatly formed and finished flush with adjacent surfaces by grinding. No joints shall be located in corners. Bare edges shall be lipped. Structural members and bracings where ever required shall be welded or bolted to the frame. The frame shall be of modular design and extensible.
8. All doors and covers shall also be fully gasketed with metal based neoprene gaskets with fastners designed to ensure proper compression of the gaskets. The hinged door shall open a maximum of 150°. All hinged doors shall have earth braid connected to the cubicle. Good quality door handles fitted with toggles to operate rods to latch with suitable slots in both top and bottom of switchboards shall be provided. Latching rods and associated brackets shall be cadmium plated.
9. Each vertical section shall be provided with a rear side cable chamber housing the cable end connections and power/control cable terminations. There should be generous availability of space for ease of installation and maintenance with adequate safety for working in one vertical section without coming into contract with any liver parts.
10. Switchboard panels and cubicles shall be fabricated with CRCA Sheet Steel of thickness not less than 2.0 mm and shall be folded and braced as necessary to provide a rigid support for all components. The doors and covers shall be fabricated from CRCA sheet steel of thickness not less than 1.6 mm. Joints of any kind in sheet metal shall be seam welded and all welding slag ground off and welding pits wiped smooth with plumber metal.
11. All panels and covers shall be properly fitted and square with the frame. The holes in the panel shall be correctly positioned.
12. Fixing screws shall enter holes tapped into an adequate thickness of metal or provided with hank

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nuts. Self-threading screws shall not be used in switchboards.

13. All electrical contacts between dissimilar metals (e.g.. aluminium conductor of cables connected to copper terminals of breakers etc..) shall be through bimetallic connection

6.3.9.5. Switchboard Dimensional Limitations

1. A base channel 75 mm x 5 mm thick shall be provided at the bottom.
2. A minimum of 200 mm blank space between the floor of switchboard and bottom most unit shall be provided.
3. The overall height of the switchboard shall be limited to 2300 mm unless otherwise stipulated.
4. The height of the operating handle, push buttons etc. shall be restricted between 300 mm and 2000 mm from finished floor level.

6.3.9.6. Switchboard Compartmentalization

1. For compartmentalized switchboards, separate totally enclosed compartments shall be provided for horizontal busbars, vertical busbars, ACBs, MCCBs and cable alleys.
2. Earthed metal or insulated shutters shall be provided between drawout and fixed portion of the switchgear such that no live parts are accessible with equipment drawn out. Degree of protection within compartments shall be at least IP 4X.
3. Sheet steel hinged lockable doors for each separate compartment shall be provided and duly interlocked with the breaker in "ON" and "OFF" position.
4. For all Circuit Breakers separate and adequate compartments shall be provided for accommodating instruments, indicating lamps, control contactors and control MCB etc. These shall be accessible for testing and maintenance without any danger of accidental contact with live parts of the circuit breaker, busbars and connections.
5. Each switchgear cubicles shall be fitted with label in front and back identifying the circuit, switchgear type, rating and duty. All operating device shall be located in front of switchgear only. Minimum height from floor level for any device mounted on panel cover shall be 250 mm.
6. A horizontal wire way with screwed cover shall be provided at the top to take interconnecting control wiring between vertical sections.
7. Separate cable compartments running the height of the switchboard in the case of front access boards shall be provided for incoming and outgoing cables.
8. Cable compartments shall be of adequate size for easy termination of all incoming and outgoing cables entering from bottom or top.
9. Adequate and proper support shall be provided in cable compartments to support cables.

6.3.9.7. Spare Provision

25% spare cubicles/space shall be provided in all switchboards to cater for future use.

6.3.9.8. Switchboard Bus Bars

1. Busbars shall be made of high conductivity, high strength aluminium alloy, complying with requirements of grade E 91E of IS 5082 - 1981. Design of busbar system shall comply to IS 5578 and IS 11353. Busbars shall be of rectangular cross sections suitable for full load current for phase bus bars as also neutral bus bar. The maximum current density shall be 1 amp per Sq.mm. Busbar shall be suitable to withstand the stresses of fault level as specified in schedule of quantities.

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2. Bus bars shall be insulated with heat shrunk PVC sleeving of 1.1 kV grade and bus bar joints provided with clip-on shrouds.
3. The bus bars shall be extensible on either side of the switchboard.
4. The bus bars shall be supported on non-breakable, non-hygroscopic epoxy resin or glass fiber reinforced polymer insulated supports able to withstand operating temperature of 110° C at regular intervals, to withstand the forces arising from a fault level of 31 MVA at 415 volts for 1 second or as stipulated in schedule of quantities.
5. All bus bars shall be colour coded.
6. Auxiliary buses for control power supply, space heater power supply or any other specified service shall be provided. These buses shall be insulated, adequately supported and sized to suit specific requirement. The material for auxiliary supply bus will be electrolytic copper.
7. Additional cross sectional area to be added to the bus bar to compensate for the holes.

6.3.9.9. Switchboard Interconnection

1. All connection and tap offs shall be through adequately sized connectors appropriate for fault level at location. This shall include tap off to feeders and instrument/control transformers. Alternatively current limiters of approved make and type shall be used.
2. For unit ratings up to 100 amps, PVC insulated copper conductor wires of adequate size to carry full load current shall be used. The terminations of such interconnections shall be crimped. Solid connections shall be used for all rating of 100 amps and above.
3. All connections, tappings, clamping, shall be made in an approved manner to ensure minimum contact resistance. All connections shall be firmly bolted and clamp with even tension. Before assembly joint surfaces shall be filed or finished to remove burrs, dents and oxides and silvered to maintain good continuity at all joints. All screws, bolts, washers shall be cadmium plated.
4. Approved spring washers shall be used with cadmium plated high tensile steel bolts with BSF threads.
5. All connectivity and tap offs shall have bimetallic connectors as required, finger touch proof terminals & integral switchgear shrouds.

6.3.9.10. Drawout Features

1. Air Circuit Breakers shall be provided in fully drawout cubicles, unless otherwise stated. These cubicles shall be such that drawout is possible without disconnection of the wires and cables. The power and control circuits shall have self-aligning and self-isolating contacts.
2. The fixed and moving contacts shall be easily accessible for operation and maintenance. Mechanical interlocks shall be provided on the drawout cubicles to ensure safety and compliance to relevant Standards. The MCCB's shall be provided in fixed type cubicles.

6.3.9.11. Instrument Accommodation

1. Instruments and indicating lamps shall not be mounted on the Circuit Breaker Compartment door for which a separate and adequate compartment shall be provided and the instrumentation shall be accessible for testing and maintenance without danger of accidental contact with live parts of the Switchboard.
2. For MCCB's instruments and indicating lamps can be provided on the compartment doors.
3. The current transformers for metering and for protection shall be mounted on the solid copper/aluminium busbars with proper supports.

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6.3.9.12. Wiring

1. All wiring for relays and meters shall be with PVC insulated copper conductor wires. The wiring shall be coded and labelled with approved ferrules for identification. The minimum size of copper conductor control wires shall be 2.5 sq. mm.
2. Wiring shall be terminated with ferrules on terminal block. CTs shall be provided with shorting facilities

6.3.9.13. Cable Terminations

1. Knockout holes of appropriate size and number shall be provided in the Switchboard in conformity with the location of incoming and outgoing conduits/cables.
2. The cable terminations of the Circuit Breakers shall be brought out to terminal cable sockets suitably located in the cable chamber
3. The cable terminations for the MCCB's shall be brought out to the rear in the case of rear access switchboards or in the cable compartment in the case of front access Switchboards.
4. The Switchboards shall be complete with tinned brass cable sockets, tinned brass compression glands, gland plates, supporting clamps and brackets etc. for termination of 1100 volt grade aluminium conductor XLPE cables.
5. Removable gland plates shall be provided for power and control cables. The gland plates shall be 3 mm thick and for single core cables shall be of non-magnetic material.

6.3.9.14. Space Heaters

Anti- condensation heaters shall be fitted in each cubicle together with an ON/OFF isolating switch suitable for electrical operation at 230 volts A.C 50 Hz single phase of sufficient capacity to raise the internal ambient temperature by 5° C. The electrical apparatus so protected shall be designed so that the maximum permitted rise in temperature is not exceeded if the heaters are energized while the switchboard is in operation. As a general rule, the heaters shall be placed at the bottom of the cubicle.

6.3.9.15. Ventilation Fans

The Switchboard shall be provided with panel mounting type ventilation fans in each panel with switchgear rated for 2500 amp and above. The fan shall be interlocked with switchgear operation. If ventilation fans cannot be provided for maintaining the required degree of ingress protection, the design of switch board cubical shall incorporate suitable measures like decreasing current density of conductors, increasing cubical volume for effective heat dissipation etc. in order to restrict temperature rise to within the required limit.

6.3.9.16. Earthing

Continuous internal copper earth bus sized for prospective fault current to be provided with arrangement for connecting to station earth at two points. Hinged doors / frames to be connected to earth through adequately sized flexible braids.

6.3.9.17. Sheet Steel Treatment And Painting

Sheet steel used in the fabrication of switchboards shall undergo a rigorous cleaning and surface treatment seven tank process comprising of alkaline degreasing, descaling in dilute sulphuric acid and a recognised phosphating process after which a coat of primer paint compactively with the final paint shall be applied over the treated surface. Final paint coat of oven baked powder coating, of minimum 50 micron thickness, of sheet approved by Architects/Owners shall then be provided.

6.3.9.18. Name Plates And Labels

Suitable engraved white on black name plates and identification labels of metal for all Switchboards and

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Circuits shall be provided. These shall indicate the feeder number and feeder designation.

6.3.9.19. 19 Local Authorities Requirement

All other requirements by the local Authority that are imposed in course of execution of the work, particularly those listed below shall be provided.

- a) Danger Signs
- b) Rubber floor mat of 10 m thickness and 1 m width provided for the full length of the switchboard.
- c) A dry chemical type fire extinguisher of 9 kg capacity with approved label
- d) Framed single line diagram with minimum A1 size
- e) First Aid Demonstration sign.

6.3.9.20. CPRI Testing

Switchboard configurations offered shall be CPRI tested. Copies of the CPRI test certificates shall be submitted with the tender.

6.3.9.21. Testing at works

Copies of type test carried out at ACB/MCCB manufacturers works and routine tests carried out at the switchboard fabricators shop shall be furnished along with the delivery of the switchboards. Architects/Owners reserves the right to get the switchboard inspected by their representative at fabricators works prior to dispatch to site to witness the routine tests

6.3.9.22. Installation

1. The foundations prepared as per the manufacturers drawings shall be levelled, checked for accuracy and the Switchboard installed. All bus bar connections shall be checked with a feeler gauge after installation. The cable end boxes shall be sealed to prevent entry of moisture. The main earth bar shall be connected to the sub-station earths.
2. Antistatic rubber matting of approved make conforming to IS 5424 - 1983, of minimum 1000 mm width 10 mm thickness shall be provided in front of and along the full length of the Switchboard. The rubber mat shall withstand 15 KV for 1 minute and leakage current shall not exceed 160 mA/sq. metre.
3. After installation the Switchboard shall be tested as required prior to commissioning.

6.3.9.23. Testing At Site

Pre-commissioning tests as required and as per manufacturers recommendations shall be carried out on each switchboards at site before energizing the switchboards including but not restricted to the following.

- a) Physical checking of the switchboards including checking alignment of panels, interconnection of Bus bars, tightness of bolts/connections and evidence of damage/cracks in any components.
- b) Physical checking and inspections of Inter panel wiring
- c) Checking free movement of ACBs/MCCBs/SFUs
- d) Checking of operation of breakers
- e) Insulation tests of bus bar supports and control wiring etc. with 1.1 kV megger.
- f) Primary & secondary injection tests of relays and CTs.
- g) Checking of Interlocking function.

6.3.10. Section – X: Metering Equipment

6.3.10.1. General

This section covers specifications for Protection and Control Relays for breakers, Instrument Transformers, Measuring Instruments, Push Buttons, and Indicating Lamps etc. required in LT and HT switchboards.

6.3.10.2. Standards and codes

Updated and current Indian Standard Specifications and Codes of Practice will apply to the equipment and

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the work covered by the scope of this contract. In addition the relevant clauses of the Indian Electricity Act 2003, Indian Electricity Rules 1956, National Building Code 1994, National Electric Code 1985, Code of Practice for Fire Safety of Building (general) :General Principal and Fire Grading - IS 1641 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable.

Application guide for Current Transformers	IS 4201:
Application guide for Voltage Transformers	IS 4140:
Application guide for Relays	IS 3842:
Electromagnetic Relays	IS 5051

6.3.10.3. Protection and control relays

1. The Circuit Breaker shall have protection and control relays as specified in the schedule of quantities. Relays shall be approved types complying with relevant ISS and having approved characteristic. Relays shall be flush mounted in dust proof cases. Relays shall be arranged so that adjustments, testing and replacement can be affected with minimum of time and labour.
2. In case of C.T. operated thermal overload and magnetic instantaneous short circuit release, the overload releases shall be such that each phase can be individually set depending on the phase unbalanced currents. The releases shall have inverse time current characteristics and the magnetic release shall be time delayed with a minimum setting of 25 ms varying up to 300 ms for discrimination without effecting the breaking current capacity of the ACB.

6.3.10.4. Current transformers

1. Separate sets of CTs shall be provided for metering and protection. C/Ts shall conform to IS 2705 (part -I, II and III) in all respects. All C/Ts used for medium voltage application shall be rated for 1 kV. C/Ts shall have rated primary current, rated burden and class of accuracy as specified in Schedule of Quantities/drawings. Rated secondary current shall be 5A unless otherwise stated. Minimum acceptable class for measurement shall be class 0.5 to 1 and for protection class 5P10. C/Ts shall be capable of withstanding magnetic and thermal stresses due to short circuit faults as applicable. Terminals of C/Ts shall be paired permanently for easy identification of poles. C/Ts shall be provided with earthing terminals for earthing chassis, frame work and fixed part of metal casing (if any). Each C/T shall be provided with rating plate indicating:
 - a. Name and make
 - b. Serial number
 - c. Transformation ratio
 - d. Rated burden
 - e. Rated voltage
 - f. Accuracy class
2. CTs shall be mounded such that they are easily accessible for inspection, maintenance and replacement. Wiring for CT shall be with copper conductor FRLS PVC insulated wires with proper termination works and wiring shall be bunched with cable straps and fixed to the panel structure in a neat manner. Facilities for shorting terminal shall be provided.

6.3.10.5. Potential transformer

PT's shall conform to IS 3156 (Part I, II and III) in all respects. Primary and secondary circuit wiring star connected and voltage ratio shall be 11 kV \square 3/110 \square 3 or 415 \square 3/110 \square 3 as specified in Schedule of

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Quantities. Class of accuracy shall be 1.0. Over voltage factor shall be 1.2

6.3.10.6. Measuring instruments

1. Direct reading electrical instruments shall conform to IS 1248 or in all respects. Accuracy of direct reading shall be 1.0 of voltmeter and 1.0 for ammeters. Other instruments shall have accuracy of 1.0. Meters shall be suitable for continuous operation between -10° C and +45°C. Meters shall be flush mounting and shall be enclosed in dust tight housing. The housing shall be of steel or phenolic mould. Design and manufacture of meters shall ensure prevention of fogging of instrument glass. Pointer shall be black in colour and shall have Zero position adjustment device operable from outside. Direction of deflection shall be from left to right. Suitable selector switches shall be provided for ammeters and volt meters used in three phase system unless otherwise stipulated, 96 mm x 96 mm instrument shall be used. The rating type and quantity of meters, instruments and protective device shall be as per Schedule of Quantities /drawings. Ammeter on motor circuit shall be provided with suppressed scales to take care of shorting surges.

2. Ammeters
Digital type Ammeter of specified range to class 1.0 accuracy with necessary selector switches. Ammeters shall be manufacture and calibrated as per IS 1248. Ammeters shall normally be suitable for 5 A secondary of current transformers. Ammeters shall be capable of carrying substantial over loads during fault conditions. Ammeters of motor circuits shall be provided with suppressed scale to cater for starting current.

1. Voltmeters

Voltmeters shall be digital type range of 3 phase 415 volt voltmeters shall be 0-500. Volt meters shall be provided with protection MCB.

2. Watt meter

Wattmeter shall be of 3 phase digital type and shall be provided with a maximum demand indicator if required.

3. Power factor meters

3 phase power factor meters shall be digital type with current and potential coils suitable for operation with current and potential transformers provided in the panel. Scale shall be calibrated for 50% lag - 100% - 50% readings. Phase angle accuracy shall be +4°.

4. Energy and reactive power meters

Trivector meters shall be two element, integrating type, KWH, KVA, KVARH meters. Meters shall confirm to IEC 170 in all respects. Energy meters, KVA, and KVARH meters shall be provided with integrating registers. The registers shall be able to record energy consumption of 500 hours corresponding to maximum current at rated voltage and unity power factor. Meters shall be suitable for operation with current and potential transformers available in the panel.

6.3.10.7. Indicating lamps

Cluster LED type indicating lamps shall be provided for indication of phases and Breaker position as required in the schedule of quantities. Lamps shall be easily removed and replaced from the front of the panel by manual means not requiring the use of extractors.

6.3.10.8. Push buttons

Push buttons shall be of non-hygroscopic material, non-swelling and fitted to avoid any possibility of sticking. Contacts shall be of adequate strength and have a positive whipping action when in operation.

1. Other condition

7.1 SITE CONDITIONS:-

Pipe and Drain Trench

1. The storm water drainage pipes shall be carefully laid to levels and gradients shown in the plans and sections but subject to modifications as shall be approved by the Architects from time to time to meet the requirements of the works. Great care shall be taken to prevent sand etc. from entering the pipes. The pipes between two manholes shall be laid truly in straight lines without vertical or horizontal undulations. The body of the pipes shall rest on an even bed in the trench for its length and places shall be excavated to receive collar for the purpose of jointing. No deviations from the lines, depths of cuttings or gradients as called for on the drawings shall be permitted without the written approval of the Architect. All pipes shall be laid at least 45cms below the finished ground level or as called for on the drawings. Trenches Setting Out
2. The contractor shall set out all trenches including widths, manholes, chambers and such other works to true grades and alignments as called for. All trenches shall be laid to true grade and in straight lines and as shown on the drawings. Trench Excavation
3. The trenches for the pipes shall be excavated with bottoms formed to level and gradients as shown on the drawings. In soft and filled in ground, the Project Manager may require the trenches to be excavated to a greater depth than the shown on the drawings and to fill up such additional excavation with concrete (1:4:8) consolidated to bring the excavation to the required levels as shown on the drawings.
4. All excavations shall be properly protected where necessary by suitable timbering, piling and sheeting as approved by the Project Manager. All timbering and sheeting when withdrawn shall be done gradually to avoid falls. All cavities be adequately filled and consolidated. No blasting shall be allowed without prior approval in writing from the Architect. It shall be carried out under thorough and competent supervision, with the written permission of the appropriate authorities taking full precautions connected with the blasting operations. All excavated earth shall be kept clear of the trenches to a distance equal to 75 cms. Trench Back Filling
5. Refilling of the trenches shall not be commenced until the length of pipes therein has been tested and approved. All timbering which may be withdrawn safely shall be removed as filling proceeds. Where the pipes are unprotected by concrete hunching, selected fine material shall be carefully hand-packed around the lower half of the pipes so as to buttress them to the sides of the trench. Width of trench
6. Recommended width of trenches at the bottom shall be as follows:-

100 mm dia pipe	55 cms
150 mm dia pipe	55 cms
225-250 cms dia pipe	60 cms
7. Maximum width of the bed concrete shall also be as above. Should the contractor excavate the trenches to width greater that specified above, no additional payment will be admissible for widths greater than specified. The contractor shall also fill the cement concrete for the pipe to the full width of the excavated trench with any extra cost.

Piping Material

RCC pipes

8. All pipes shall be centrifugally spun RCC pipes NP3. Pipes shall be true and straight with uniform bore throughout. Cracked, warped pipes shall not be used on the work. All pipes shall be tested by

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the manufacturer and the Contractor shall produce, prior to use on site, a certificate to that effect from the manufacturer. The pipes shall be with or without reinforcement as required and of the class as specified. These shall conform to IS: 458-1971.

9. All pipes shall be true to shape, straight, perfectly sound and free from cracks and flaws. The external and internal surface of the pipes shall be smooth and hard. The pipes shall be free from defects resulting from imperfect grading of the aggregate mixing or moulding. Pipe Laying
10. RCC spun pipes shall be laid on cement concrete bed of cradles as specified and shown on the detailed drawings. The cradles may be precast and sufficiently cured to prevent cracks and breakage in handling. The invert of the cradles shall be left 12 mm below the invert level of the pipe and properly placed on the soil to prevent any disturbance. The pipe shall then be placed on the bed concrete or cradles and set for the line and gradient by means of sight rails and boning rods, etc. Cradles or concrete bed may be omitted, if directed by the Project Manager. Pipe Jointing
11. Semi flexible type collar joint. Hemp rope soaked in neat cement wash shall be passed round the joint and inserted in it by means of caulking tool. More skein of yarn shall be added and rammed home. Cement mortar with one part of cement and two part of sand and with minimum water content but on no account soft or sloppy, shall be carefully inserted, punched and caulked into the collar and more cement mortar added until the space of the collar has been filled completely with tightly caulked mortar. Provision of rubber sealing ring in the collar joint shall also be made. The joint shall then be finished off neatly outside the socket at an angle of 45 deg.
12. The joint shall be cured for at least seven days. Refilling at joints will be permitted only on satisfactory completion of curing period.
13. Cement Concrete for Pipe Supports:

- a. Pipes may be supported on brick masonry or precast RCC or in situ cradles. Cradles shall be as shown on the drawings.

		up to 1.5 m depth	up to 3 m depth	beyond 3 m depth
1	RCC or SW in sub soil water	All round (1:3:6)	In Haunches (1:3:6)	In Haunches (1:3:6)

- b. Unless otherwise directed by the Project Manager cement concrete for bed, all round or in haunches shall be as follows:
- c. Pipes in loose soil or above ground shall be supported on brick or stone masonry pillars as shown on the drawings.

14. Measurement:

- a. Measurement for excavation of pipes trenches shall be made per linear meter.
- b. Trenches shall be measurement between outside walls of manholes at top and the depth shall be the average depth between the two ends to the nearest cm. The rate quoted shall be for a depth up to 1.5 metre or as identified in the Schedule of Quantities.
- c. RCC pipes shall be measured for length of the pipe line per linear meter. Length between manholes shall be recorded from inside of one manhole or inside of other manhole.

Construction of Manhole

15. Based on approved drawings, manholes are to be constructed, the excavation, filling back and ramming, disposal of surplus earth, preparation of bottom and sides etc. shall be carried out as described earlier under trench excavation.
16. The manhole shall be built on a base concrete 1:3:6 of 150mm thickness for manholes up to

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1500mm depth and 250mm thickness for manholes from 1500 to 2500mm depth and 300mm thickness manholes of depth greater than 2500mm. Reinforcement as shown shall be provided in the base slabs.

17. The walls shall be of brick work of thickness as shown in drawings built in cement mortar 1:5. The joints of brick work shall be raked and plastered internally in cement mortar 1:3 and finish with a coat of neat cement, external plaster shall be rough plaster in 1:3, PCC benching & semicircular channels of the same diameter as the pipes shall be provided and finished with neat cement coating.
18. All manholes shall be provided with poly propylene coated steel reinforced foot rest. The polypropylene shall conform to ASTM D-4101 specification, injection moulded around 12 mm dia IS-1786 grade FE-415 steel reinforcing bar. These rungs shall be set at 30cms interval in two vertical runs at 380mm apart horizontally. The top rung shall be 450mm below the manhole cover.

Measurements

19. Manhole shall be measured in numbers as indicated in the Bill of Quantity. The depth of manhole shall be measured from invert of channel to the top of manhole cover.
20. Manhole with depth greater than specified under the main item shall be paid for under 'Extra Depth' and shall include all items as given for manholes depth will be measured to the nearest cm. Depth of the manholes shall be measured from top of the manhole cover to bottom of channel. The following shall be inclusive in the quoted para of manhole
21. Bed concrete Brick work.
 - a. Inside & Outside Plastering
 - b. R C C top slab, benching and channeling including drop connections.
 - c. Supply and fix foot rests.
 - d. De-watering of chambers
 - e. Excavation, refilling, necessary de-watering and disposing off surplus soil
 - f. Cost of angle frame and embedding the frame in concrete bed. Road Gully

Chambers

22. The chamber shall be of brick masonry with Bricks of class designation 75 in cement mortar 1:5 (1cement : 5 coarse sand) and shall have a PCC/SFRC/D.I dully grating with frame fixed in 150mm thick cement concrete 1:2:4 (1cement : 2 coarse sand : 4 hard stone ballast 20mm nominal size) on top. The size of the chamber shall be taken as the clear internal dimension as specified in the schedule of quantities. The brick walls on the top of the bed concrete 1:4:8 (1cement: 4 coarse sand: 8 hard stone ballast 40mm and down gauge) of the chamber shall be plastered with 12mm thick cement plaster 1:3 (1cement: 3 coarse sand) internally and externally and finished with a floating coat of neat cement. The excavation shall be done true to dimension and level shown in the drawing.

Testing

23. All storm water lines shall be carefully tested for water tightness by means of water pressure maintained for not less than 30 minutes. Testing shall be carried out from manhole to manhole. All pipes shall be subject to a test pressure of 1.5 meter head of water. The test pressure will however, not exceed 6 meters head at any point. The pipes shall be plugged preferably with standard design plugs or with rubber plugs on both sides, the upper end shall, however, be connected to a pipe for filling with water and getting the required head poured at one time.

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Sewer lines shall be tested for straightness by:

- a. The contractor shall give a smoke test to the drain and sewer at his own expense and charges, if directed by the Owner's site representative.
- b. A test register shall be maintained which shall be signed and dated by contractor and Owner's site representative.
- c. Means of a mirror at one end a lamp at the other end. If the pipe is straight the full circle of light will be seen otherwise obstructions or deviations will be apparent.
- d. Inserting a smooth ball 12 mm less than the internal diameter of the pipe. In the absence of obstructions such as yarn or mortar projecting at the joints the ball shall roll down the invert of the pipe and emerge at the lower end.

- All the equipments and their installation shall be suitable for the environmental conditions encountered at the location.

7.2 Inspection and test

13. Documentation

All equipment shall be completely assembled, wired, adjusted and tested at the factory as per the relevant IS/IEC standards. The following tests shall however be carried out as a minimum. All the tests being conducted shall clearly be brought out in the Quality Assurance Plan (QAP) by Bidder. The category of test i.e whether it is a routine test or type test or both, must also be brought out clearly in the QAP with specific mention of relevant standard Number against each test.

a)	BOM verification	100 % Witness
b)	Dimensional check , Painting thickness , finish quality & workman ship	100 % Witness
c)	One Set of Manufacturer's Test certificates for major bought out equipment shall be made available during inspection	100 % Review
d)	All Routine & acceptance tests in including Load test for Servostablizer set as per relevant standards shall be conducted.	100 % Witness
e)	All type tests shall be as per the relevant IS/IEC standard .	100 % Review

Test certificates

Test certificates for the type tests (as per Latest & relevant standards) of not older than 5years (as on date of enquiry) issued by any recognized laboratory for the similar rating servo set shall be furnished for NMRC's review along with technical data sheets. If Type test certificates are not available same shall be conducted by vendor **at his own cost in any recognized laboratory.**

Units shall be type tested in accordance with the IEC standards. Following type test certificates shall be provided

- Short time and peak withstand current test
- Temperature rise test
- Dielectric test
- Test of apparatus (CB & ES)

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

- Arc fault test
- Measurement of resistance of main ckt.
- Mechanical endurance test
- Duty cycle test.
- Internal arc test for HT chamber
- Degree of protection.

Type reports of Transformer and LT switchgear shall be furnished as per relevant IEC/IS standards.

Shop Tests

All equipment and material shall be subjected to manufacturer's standard shop tests. Tests shall be carried out at the manufacturer's works during and after completion of manufacture of different component parts in accordance with the requirements of relevant codes, and wherever not specified in the said codes/regulations, the tests shall be carried out in accordance with the standards approved by the Purchaser.

**DRAWINGS, DATA AND MANUALS
To be submitted for Approval and Distribution**

Sl.no	Document to be submitted for Approval	Approval/ Information
i.	Electrical single line diagram showing rating of all equipment.	Approval
ii.	GA / OGA Drawing and BOM	Approval
lii	Data Sheets of servo Transformer & breakers	Approval
Iv	Foundation Plan & Loading Details of PSS	Information
V	Servo area Layout and Cross Section considering acoustic enclosure, exhaust piping, cable trenches, cable trays, fuel trenches etc.	Approval
Vi	Any other relevant drawings, documents or data necessary for satisfactory installation, operation and maintenance	Information
Vii	Type test certificates	Information
Viii	O&M, Storage & Erection instruction manual	Information
Ix	As built & Commissioned / final document	Information

Note:

- The manuals shall clearly indicate method of installation, check-ups and tests to be carried out before commissioning of the equipment.
- The Vendor may note that the drawings, data and manuals listed herein are minimum requirements only.
- The Vendor shall ensure that all other necessary write-ups, curves, calculations and information required to fully describe the equipment offered are submitted with his bid.

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Make of components:

S.NO	ITEM	RECOMMENDED ELECTRICAL VENDOR
1	Servo set	Sen & Pandit Systems, Moto line Electronics, Power Bank (AMPLE) India, Baid Power Services Pvt Ltd. Automatic Electric (AE) ,Fuji Electronics Pvt Ltd, Selvon, Servo Control & System, ABC transformer or equivalent
2	LT cable	Finolex, KEI, Havells, Polycab or equ.
3	LT Breaker	L&T/ABB/GEC/Siemens/Schnieder or eq.
4	Auxiliary Relays	ABB, Jyoti, Areva or eq,
5	Bi-metal Relays	ABB, BCH Electric, C&S Electric, Larsen & Toubro Ltd., SchneiderElectric, Siemens, GE or eq.
6	Contactors	ABB, BCH Electric, C&S Electric, GE India, Larsen & Toubro, SchneiderElectric, Siemens or eq.
7	Control switches (Breaker)	Areva T&D India Ltd, Reliable Electronic Components, Switron Devices, Alstom, Kaycee or eq.
8	Control switches/Selector switches	Areva T&D, Hotline Switchgear & Controls, Kaycee Industries Ltd.,Larsen & Toubro, Reliable Electronic Components Pvt. Ltd., SiemensLimited, Switron Devices. or eq.
9	Earth Leakage Circuit Breaker	Datar Switchgear, Indo Asian Fusegear , Legrand, Havell's, ABB,Siemens, Schneider/ or eq.
10	Fuses	GE India Industrial, Indo Asian Fusegear., Larsen & Toubro, Siemens,Cooper Bussman or eq.
11	Heavy duty switches	C&S Electric, Indo Asian Fusegear, Larsen & Toubro, Siemens or eq.
12	MCBs	Datar Switchgear, Havell's, Indiana Current Control, Indo Asian Fusegear, Legrand, Standard Electricals, Schneider, ABB, Siemens or eq.
13	MCCBs	GE India, Siemens, Larsen & Toubro, Schneider Electric, ABB or eq.
14	Meters	Automatic Electric, MECO Instruments, Nippen Electrical Instruments Co., Rishabh Instruments. or eq.

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

15	Protection Relays (Conventional & Numerical)	ABB, Areva, Easun Reyrolle, Larsen & Toubro (P&B), Schneider Electric, Siemens, Schweitzer Engg. or eq.
16	Push buttons & Indicating lamps	BCH Electric, C& S Electric, Hotline Switchgear & Controls, Larsen &Toubro, Precifine Products, Schneider Electric India, Shri Tuls Switchgears., Siemens, Teknic Controls, Essen Deinki or eq.
17	Fuse-switch combination	ABB, C&S Electric, Havell's, Indo Asian Fusegear, Larsen &Toubro, Schneider Electric India, Siemens, Standard Electricals, GE or eq.
18	Timers	BCH Electric., Electronic Automation Pvt. Ltd., Larsen & Toubro Ltd., Siemens Limited or eq.
19	CT & PTs (MV)	Gilbert & Maxwell Electricals Kalpa Elektrikal., Kappa Electricals, Narayan Powertech, Pragati Electricals Precise Electricals, Silkaans Electricals. or eq.

7.3 COMPLETENESS OF TENDER: -

- All fittings, unit assemblies accessories, hardware foundation bolts, terminals blocks for connections, cable glands and miscellaneous associated materials and accessories of work which are useful and necessary for efficient working of the equipment shall be deemed to have been included within the scope of the work in the tender and within the overall details for complete item whether they have been specifically mentioned or not
- Within fifteen days of the signing of Agreement, the contractor shall have to notify in writing the name of his two authorized representatives one of them will always be available at the site of work to receive the orders / instructions by Engineer in charge and the other for issue of materials and other miscellaneous works. The contractor shall be fully responsible for the orders / instructions received by his representatives regarding quality, progress and materials from the Engineer-in-charge or any higher officer of NMRC

Note:

- Vendor shall strictly follow the list of makes for equipment's as specified above.
- For components other than the above, vendor shall submit past track record for the proposed sub-vendors and obtain written approval from NMRC before placing order

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

13. Section 7: Draft Contract Agreement

THIS AGREEMENT made on the day of..... 2023 at Noida, District Gautam Budh Nagar, Uttar Pradesh Between **Noida Metro Rail Corporation Limited** (Hereafter referred to as "NMRC"), a company incorporated under Companies Act 2013, vide corporate identification Number: U60231UP2014SGC066849 and having its registered office at **Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29, Noida -201301, District Gautam Budh Nagar, Uttar Pradesh, India** represented by of the company, by virtue of his designation and authorization by....., **Managing Director, NMRC** (hereinafter called as the "Employer"), which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns) of the one part,

AND

..... having its registered office at represented by (herein after called the "**Contractor**", which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns) of the other part. WHEREAS the Employer desires that the Works known as the "....." should be executed by the Contractor and has accepted a contract by the Contractor for the execution and completion of these Works.

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement -

Reference:

- (i) Tender No. Dated
- (ii) Bid Documents duly accepted and submitted by dated
- (iii) The Bidding Documents which include all the Sections specified below:
 - a. Section 1: General Information
 - b. Section 2: Terms of Reference
 - c. Section 3: Instructions to Bidders
 - d. Section 4: Qualification, Evaluation and Selection Process
 - e. Section 5: Special Conditions of Contract
 - f. Section 6: Technical Specifications
 - g. Section 7: Draft Contract Agreement
 - h. Section 8: Appendix and Forms
 - i. General Conditions of Contract (GCC)
 - j. Safety, Health and Environment Management (SHE)
 - k. Amendment/ Modification, if any
- (iv) Notice of Award (.....) issued by NMRC
- (v) Letter of Acceptance of NOA (.....) given by to NMRC

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

(vi) Any other admitted correspondence documents between NMRC and the Bidder.

3. Duration of Contract

The Corporation intends to appoint a Contractor to NMRC for a period of Two Months.

4. Price Schedule

NMRC shall consider the following Total Contract Price, as quoted by the Contractor as part of financial bid.

5. The courts at District Gautam Budh Nagar, Uttar Pradesh shall have the exclusive jurisdiction to try all disputes arising out of this agreement between the parties.

6. In consideration of the payments to be made by the Employer to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract and Notice of Award issued. **"Any conditions, deviation, assumption, exclusion, suggestion of alternative clauses, request of amendments in conditions & specifications of work submitted by bidders along with his Technical Bid or Financial bid, which is different from the Tender Document, Corrigendum, Addendum uploaded by NMRC on the E-Tender Portal (<http://etender.up.nic.in>) or www.nmrcnoida.com and any other correspondence in this regard, shall not be treated as a part of the contract Agreement & shall not be binding upon NMRC in anyway whatsoever at any stage of work during execution or thereafter."**

7. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract and NOA.

IN WITNESS where of the parties hereto have caused this Agreement to be executed in accordance with the laws of India on the day, month and year specified above.

For and on behalf of the Contractor
Signature of the authorized official

For and on behalf of the Employer
Signature of the authorized official

Name of the official

Name of the official

Stamp/Seal of the contractor

Stamp/Seal of the Employer

In the presence of:

In the presence of:

Sign of Witness 1 _____

Sign of Witness 1 _____

Name _____

Name _____

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Address _____

Address _____

Sign of Witness 2 _____

Sign of Witness 2 _____

Name _____

Name _____

Address _____

Address _____

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

14. Section 8: Appendix and Forms of Tender

Appendix 1: Metro Alignment

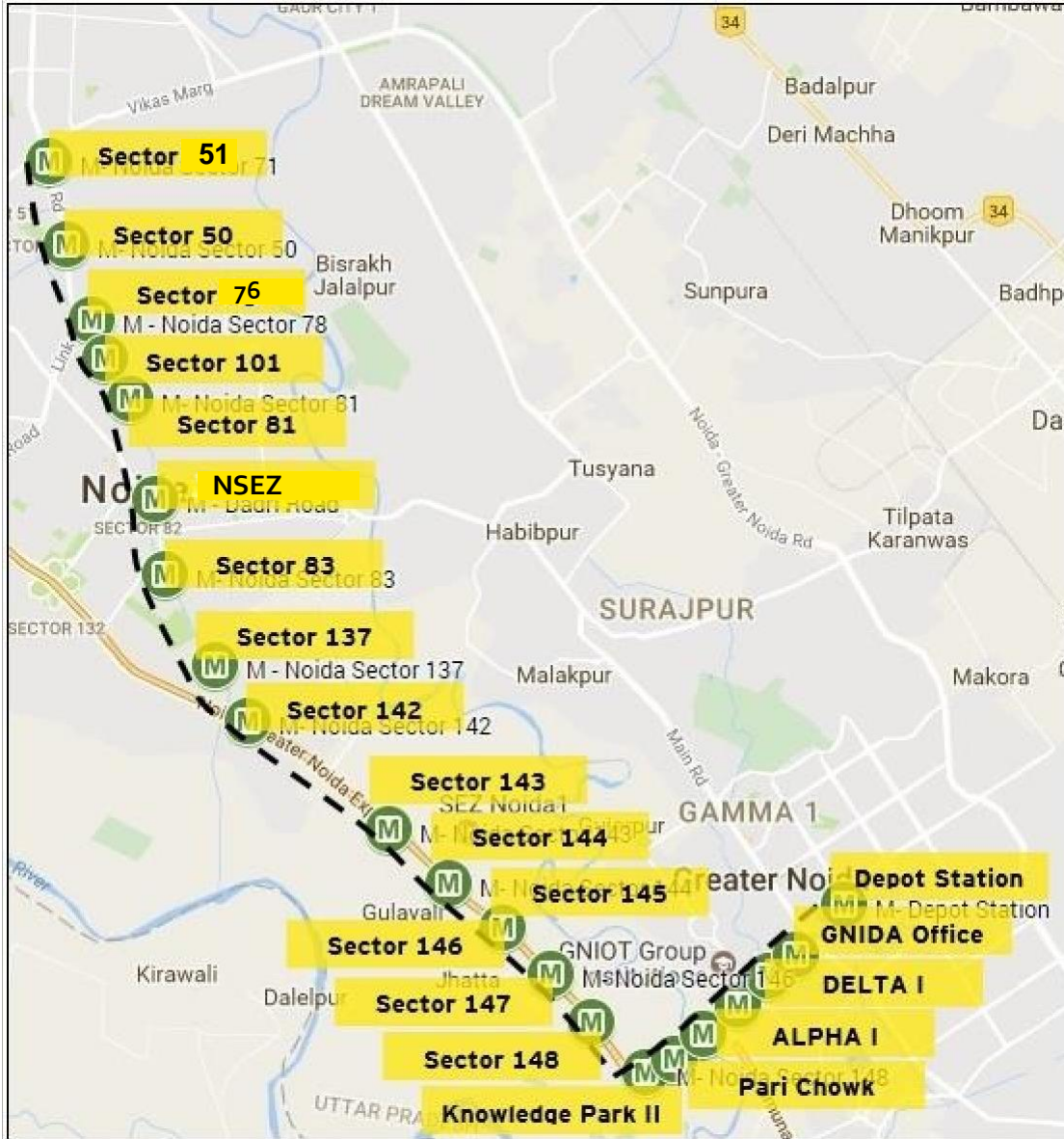


Fig: The Upcoming Metro Line

Please Note: The map shown above is indicative (not to scale)

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Appendix 2: Quality Assurance

The Contractor shall implement a Project Quality Management Plan in accordance with ISO9001 "Quality System - Model for Quality Assurance in Design/Development, Production, Installation and Servicing" to ensure that all materials, workmanship, plant and equipment supplied, and work done under the contract meets the requirements of the contract. This plan shall apply to all activities related to the quality of items, including designing, purchasing, inspecting, handling, assembling, testing, storing, and shipping of materials and equipment and different elements of maintenance work and installations of system components.

The Quality Plan to be prepared by the Contractor and submitted to the Engineer shall follow the requirements of ISO 9000 and address each element therein.

Registration of the Contractor's organisation or subcontractors or sub-consultants is not required for this Project, but the Project Quality Management Plan as submitted shall meet the intent of the ISO 9000 requirement in that there is a comprehensive and documented approach to achieving the project quality requirements.

Quality Assurance Management Plan

The Project Quality Management Plan (PQMP) shall as a minimum address the quality system elements as required by ISO 9001, generally noting the applicability to the Contractor's Works Programme for the Project. Procedures or Quality Plans to be prepared by others (Suppliers, Subcontractors, and Sub-consultants) and their incorporation in the overall PQMP shall be identified.

The Contractor shall provide and maintain a Quality Assurance Plan (QA) to regulate methods, procedures, and processes to ensure compliance with the Contract requirements. The QA Plan, including QA written procedures, shall be submitted to the Engineer for his review.

Adequate records shall be maintained in a readily retrievable manner to provide documented evidence of quality monitoring and accountability. These records shall be available to Employer at all times during the term of the Contract and during the Defects Liability Period and for a five-year period thereafter.

The Plan shall identify:

- a. Design Process: that control, check and verify the accuracy, completeness and integration of the design shall be performed by certified personnel and in accordance with documented procedure that have the written consent of the Engineer.
- b. Special Processes: that control or verify quality shall be performed by certified personnel and in accordance with documented procedures that have the written consent of the Engineer;
- c. Inspection and Test: Inspection and testing instructions shall provide for reporting non conformances or questionable conditions to the Engineer; Inspection shall occur at appropriate points in the installation sequence to ensure compliance with drawings, test specifications, process specifications, and quality standards. The Engineer shall designate, if necessary, inspection hold points into installation or inspection planning procedures;
- d. Receiving Inspection: These procedures shall be used to preclude the use of nonconforming materials and to ensure that only correct and accepted items are used and installed;
- e. Identification and Inspection Status: a system for identifying the progressive inspection status of equipment, materials, components, subassemblies, and assemblies as to their acceptance, rejection, or non-inspection shall be maintained;

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

- f. Identification and Control of Items: an item identification and traceability control shall be provided;
- g. Handling, Storage, and Delivery: provide for adequate work, surveillance and inspection instructions.
- h. The Plan shall ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, and defects in materials and equipment shall be promptly identified and corrected.
- i. The Plan shall provide for establishing and maintaining an effective and positive system for controlling non-conforming material including procedures for the identification, segregation, and disposal of all non-conforming material. Dispositions for the use or repair of nonconforming materials shall require the Engineers consent.

Plan Implementation and Verification

The Plan shall clearly define the QA Organisation. Management responsibility for the QA shall be set forth on the Contractor's policy and organisation chart. The Plan shall define the requirements for QA personnel, their skills and training. Records of personnel certifications shall be maintained and monitored by the QA personnel. These records shall be made available to the Engineer for review, upon request.

The QA operations shall be subject to the Engineers, Employer or Employer's authorised representative's verification at any time, including: surveillance of the operations to determine that practices, methods and procedures of the plan are being properly applied; inspection to measure quality of items to be offered for acceptance; and audits to ensure compliance with the Contract documents.

The contractor's Quality Audit Schedule shall be submitted to the Engineer for consent weekly or more frequently as required.

The results of Quality Audits shall be summarized in the Contractor's weekly reports.

The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer to carry out on-site and off-site surveillance of Quality Assurance Audits to verify that the quality system which has the consent of the Engineer is being implemented fully and properly.

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 1: Letter of Proposal Submission

[Location, Date]

To

DGM (RS, Ops & Elect.)
Noida Metro Rail Corporation (NMRC) Limited
Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29,
Noida - 201301
District Gautam Budh Nagar, Uttar Pradesh

Subject: RFP for Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Dear Sir,

We, the undersigned, offer to **Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.** in accordance with your RFP Document dated and our Proposal. We are hereby submitting our Technical and Financial Proposal, in a sealed envelope. We confirm that we have read the RFP Document in totality and abide by the terms and conditions stated in the document.

We acknowledge that we have

- Studied and analyzed and satisfied ourselves about all the requirement of the tender including but not limited to market and market conditions
- Carefully assessed the commerciality of Project and that we will be fully responsible for all its assessment in this regard.
- Seen / visited / assessed the potential locations and fully understand and comprehend the technical, financial, commercial and investment requirements.

We have filled the complete information correctly in **Form 18.**

We hereby declare that all the information and statements made in this Proposal are true and accept that any misinterpretation contained in it may lead to our disqualification. Our Proposal is binding upon us.

We understand you are not bound to accept any Bid you receive.

Yours Sincerely,

Authorized Signature [In full and initials]:

Name and Title of Signatory:

Name and address of Firm:

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 2: Firm Details

1.	Title and name of the Project: Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.
2.	State the structure of the Bidder's organization (Bidders to complete/delete as appropriate) Sole Bidder
3.	For Bidders who are individual companies or firms, state the following: Name of Company or firm: Legal status: (e.g., incorporated private company, proprietorship, etc.) Registered address: Year of incorporation..... Principal place of business: Contact person: Contact person's title: Address, telephone, facsimile number and e-mail ID of contact person:
4.	JV & consortium not allowed.
5.	Employees Provident Fund No. (attach documentary proof) -
6.	Employees State Insurance Acts in India No. (attach documentary proof) -
7.	GST Registration No. (attach documentary proof) -
8.	PAN (attach documentary proof) -

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 3: Capability Statement

It is Compulsory for the bidder to fill this statement and the bidder must upload those document that support this statement

Tender Reference No : _____

Name of Work:_____

Name of Bidder: _____

S.No.	ELIGIBILITY CRITERIA	(To be filled by the Bidder)
1	Sole proprietorship, registered partnership firm, public limited company, private limited company can submit the Bid. The firms and the companies should be registered in India.	Yes/ No
2	<p>The Bidder should have a minimum experience of having satisfactorily completed similar works during last 7 (Seven) years period ending last day of month before the one in which the bids are invited should be either of the following:</p> <ul style="list-style-type: none"> i. One similar completed work costing not less than the amount equal to Rs. 19.90 Lakh (Rupees Nineteen Lacs Ninety Thousand only) or ii. Two similar completed works each costing not less than the amount equal to Rs. 12.50 Lakh (Rupees Twelve Lacs and Fifty Thousand only) or iii. Three similar completed works each costing not less than the amount equal to Rs. 9.94 Lakh (Rupees Nine Lacs and Ninety Four Thousand only). 	7 Years

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

S.No.	<u>ELIGIBILITY CRITERIA</u>	(To be filled by the Bidder)										
3	<p>The Bidder should have minimum average annual turnover of 24,82,874.00 (Rupees Twenty Four Lakh eighty two thousand eight Hundred seventy four only) in the last 3 (three) Financial Years (2019-20, 2020-21, 2021-22) preceding the BidDue Date.</p>	<table border="1"> <tr> <td data-bbox="726 315 967 376">FY 19-20</td> <td data-bbox="967 315 1160 376"></td> </tr> <tr> <td data-bbox="726 376 967 436">FY 20-21</td> <td data-bbox="967 376 1160 436"></td> </tr> <tr> <td data-bbox="726 436 967 497">FY 21-22</td> <td data-bbox="967 436 1160 497"></td> </tr> <tr> <td data-bbox="726 497 967 557">Total Turnover</td> <td data-bbox="967 497 1160 557"></td> </tr> <tr> <td data-bbox="726 557 967 658"><u>Average Turn-over</u></td> <td data-bbox="967 557 1160 658"></td> </tr> </table>	FY 19-20		FY 20-21		FY 21-22		Total Turnover		<u>Average Turn-over</u>	
FY 19-20												
FY 20-21												
FY 21-22												
Total Turnover												
<u>Average Turn-over</u>												
4	<p>The Bidder should have Positive Profit before Tax (PBT) during any of the financial year during immediately preceding three audited financial years, Financial Years (2019-20, 2020-21, 2021-22)</p>	<table border="1"> <tr> <td data-bbox="563 790 708 851">FY 19-20</td> <td data-bbox="708 790 1011 851"></td> </tr> <tr> <td data-bbox="563 851 708 911">FY 20-21</td> <td data-bbox="708 851 1011 911"></td> </tr> <tr> <td data-bbox="563 911 708 972">FY 21-22</td> <td data-bbox="708 911 1011 972"></td> </tr> </table>	FY 19-20		FY 20-21		FY 21-22					
FY 19-20												
FY 20-21												
FY 21-22												
5	<p>The Bidder must have either the Registered Office or the functional Branch Office located in Delhi NCR, Noida, and Greater Noida.</p>											
6	<p>The Bidder should be registered with the Goods and Services Tax Authorities.</p>											
7	<p>The Bidder should not have been blacklisted/ banned/ declared ineligible for corrupt and fraudulent practices by the Government of India/ any State Government/ Government Agency and Supreme court and contracts have been terminated/ foreclosed by any company / department due to non-fulfillment of Contractual obligation in last 5 (five) financial years.</p>											

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 4: Work Experience

The following format shall be used for statement of experience of Bidder:

SN	Similar Contract description	Contract Identification Number	Award date & Completion date	Employer's Name, address, telephone number, e-mail etc	Role in contract		If in Consortium then % participation	Completion cost	Value of similar work in completed work
					Individual	Consortium			
1									
2									
3									
4									
Add required number of rows									

Authorized signatory

Name:

Date:

Name of the Bidder with seal

NOTE:

1. Only the value of contract as executed by the applicant/member in his own name should be indicated. Where a work is undertaken by a group, only that portion of the contract which is undertaken by the concerned applicant/member should be indicated and the remaining done by the other members of the group be excluded. This is to be substantiated with documentary evidence
2. The Bidder shall upload details of work executed by them in the prescribed format for the works to be considered for qualification of work experience criteria. Documentary proof such as completion certificates from the client clearly indicating the nature/scope of work, actual completion cost and actual date of completion for such work should be uploaded. In case work is executed for private client documentary proof such as copy of work order, Bill of quantities, Bill wise details of payment received certified by CA, TDS certificates for all the payments received, copy of final/ last bill paid by the client should be uploaded. The offers submitted without this documentary proof will not be evaluated.
3. Value of successfully completed portion of any ongoing work up to the last day of the previous month of tender submission will also be considered for qualification of work experience criteria.
4. For completed works, value of work done shall be updated to the last day of the previous month of tender submission price level assuming 5% inflation for Indian Rupees every year and 2% for foreign currency portions per year. The exchange rate of foreign currency shall be applicable 28 days before the submission date of tender.
5. If the above work(s) comprise(s) other works also, then client's certificate clearly indicating the amount of work done in respect of the "similar work" shall be furnished by the Bidder in support of work experience along-with their tender submissions.

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 5: Financial Capability Details

Bidder should submit their financial details as per the following:

This is to certify that the _____ details _____ of avg. annual T/O and profit before tax of M/s _____ having registered office at _____, as applicable, is as below:

A.

S.No.	Financial year	Name of the Bidder	Turnover from Similar Work (Total Turnover)
1.	FY 19-20		
2.	FY 20-21		
3.	FY 21-22		
	Average Annual Turn-over		

B.

S.No.	Financial year	Name of the Bidder	Profitability
1.	FY 19-20		
2.	FY 20-21		
3.	FY 21-22		

Certificate of the Chartered Accountants/Statutory Auditors

Based on Audited Accounts and other relevant documents of _____ (Name of Bidder), we M/s _____, Chartered Accountants/ Statutory Auditors, certify that the above information pertaining to **(2019-20, 2020-21, 2021-22)** is correct.

Signature and Seal of
Chartered Accountants/Statutory Auditors
(with membership no. & UIDN No.)
Authorised Signatory

(Name & Designation of Authorised Signatory)

In case the Financial Statements for the latest financial year are not audited and therefore the Bidder cannot make it available, the Bidder shall give an undertaking to this effect and the statutory auditor/charted accountant shall certify the same. In such a case, the Bidder shall provide the Audited Financial Statements for 2 (two) years preceding the year for which the Audited Financial Statement is not being provided. Also, pertaining to latest financial year, the bidder shall submit an affidavit certifying that “The Annual Accounts have not been audited so far .we are submitting the CA certified provisional accounts which shall be substantiated by the audited accounts, we pre- pared..”

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

NOTE:

1. All such documents reflect the financial data of the bidder and not that of sister or parent company.
2. The financial data in above prescribed format shall be certified by CA/ Company Auditor under his signature and stamp in original along with membership no and UDIN.
3. The Bidder shall provide the audited annual financial statements as required.

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 6: Memorandum

Name of Work: Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

I/We agree to keep the quoted rate open for acceptance for 180 days from the due date of submission thereof and not make any modification in its terms and conditions.

I/We hereby declare that I/We shall treat the quotation documents, drawings and other records connected with the works as secret/ confidential documents and shall not communicate information derived there from to any person other than the information in any manner prejudicial to the safety of NMRC.

Signature of the bidder with seal

Dated:

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 7: Undertaking

I confirm that We (Bidder, including any member in case of Consortium), _____

- a. Have not been banned /declared ineligible for corrupt and fraudulent practices by any government/government-undertaking/ semi-government/ govt.-controlled institutions, any court of law having jurisdiction in India for the past 5 (five) years.
- b. Do not have any pending litigation & non-performing contracts during last 5 (five) years. Further, has not been barred by any government/government-undertaking/ semi-government/ govt.-controlled institutions
- c. Have not abandoned any work in last 5 (five) years.
- d. Have not delayed in similar work completion during orders executed in last 5 (five) years.
- e. Do not ever been terminated due to poor performance.
- f. Have not suffered Bankruptcy/ insolvency in last 5 (five) years.
- g. Have not been blacklisted/debarred by any organization.
- h. Have not been be involved in any illegal activity and/or has not been charge sheeted for any criminal act during the last 5 (five) years.
- i. Have not submitted any misleading information in the Bid.
- j. Are financially sound to perform the work.

Authorized signatory

Name:

Date:

Name of the Bidder with seal

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 8: Power of Attorney

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.)

Power of Attorney to be provided by the Bidding Company in favour of its representative as evidence of authorized signatory's authority.

Know all men by these presents, We(name and address of the registered office of the Bidding Company) do hereby constitute, appoint and authorize Mr./Ms(name and residential address) who is presently employed with us and holding the position of, as our Attorney to do in our name and our behalf all or any of the acts, deeds or things necessary or incidental to submission of our Bid for **Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida** in response to the RFP Document dated issued by Noida Metro Rail Corporation Ltd. ("NMRC" or "the Corporation"), including signing and submission of the Bid and all other documents related to the Bid, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document which the Corporation may require us to submit. The aforesaid Attorney is further authorized for making representations to the NMRC or any other authority, and providing information / responses to the NMRC, representing us in all matters before the NMRC, and generally dealing with the Corporation in all matters in connection with our Bid till the completion of the bidding process as per the terms of the RFP Document and further till the Contract is entered into with the NMRC and thereafter till the expiry of the Contract.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the RFP Document.

Signed by the within named

.....[Insert the name of the executant company] through the hand of

Mr.

duly authorized by the Board to issue such Power of Attorney Dated this day of

Accepted

.....

Signature of Attorney

(Name, designation and address of the Attorney)

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Attested

(Signature of the executant)
(Name, designation and address of the executant)

Signature and stamp of Notary of the place of execution

Common seal of has been affixed in my/our presence pursuant to Board of Director's Resolution dated.....

WITNESS

1.
(Signature)
Name

Designation.....

2.
(Signature)
Name

Designation.....

Notes:

1. The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and the same should be under common seal of the executants affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.
2. In the event, power of attorney has been executed outside India, the same needs to be duly notarized by a notary public of the jurisdiction where it is executed.
3. Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a board resolution / power of attorney, in favour of the person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 9: Saleable Form for Tender Document

Job No.

The required fee of tender form has been deposited in _____ Bank A/c No. _____ RTGS/NEFT and the scanned copy of UTR receipt with Transaction Id is being enclosed with E-tender documents. If the copy of UTR receipt is not uploaded with the E-tender the tender shall be rejected.

DETAILS OF EARNEST MONEY ATTACHED

The required amount of Earnest money has been deposited in _____ Bank A/c No. _____ RTGS/NEFT and the scanned copy of UTR receipt with transaction Id is being enclosed with E-tender documents. If the copy of UTR receipt is not uploaded with the E-tender the tender shall be rejected.

Signature of BIDDER

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 11: Undertaking pertaining to Personnel

- We confirm to deploy Project Personnel required to achieve progress of work as per approved construction of work program and conditions mentioned in the tender document.
- We confirm to deploy man power requirement of SHE Organization as required under Conditions of contract on Safety and Health for electrical works and confirm to deploy man power over and above the minimum numbers, if the work requires.
- The contractor shall deploy resources as per the mentioned minimum requirement in the tender and confirm to deploy manpower over and above the minimum numbers indicated above, if the work requires so.
- These minimum resources are as per the requirements of the various activities at different stages of works. All resources need not to be mobilised simultaneously, resources as per the requirement of various stages of works shall be mobilised in accordance with the instructions of the Engineer. The decision of the Engineer shall be final and bonding.
- The performance of project personal deployed will be evaluated periodically by Employer during the contract period. In case the performance of any of the personnel is not satisfactory, the contractor shall replace them with good personnel immediately as per the directions of the Engineer.

Date:

Signature with Stamp/Seal

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 12: Resources proposed for the O&M - Plant & Equipment

1. We hereby confirm to deploy the minimum resources as per mentioned minimum requirement in the tender document.
2. We confirm to deploy resources as per the requirement and also confirm to deploy plants & equipments over and above the minimum numbers, if the work requires so.
3. Hiring of Cranes shall be as per approved by Engineer-in-Charge. Third party certification of cranes, competency certification of the operators etc. would be required before grant of approval.

Date:

Signature with Stamp/Seal

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 13: Bid Capacity Information

Name and brief particulars of contract (Clearly indicate the part of the work assigned to the applicants)	Name of client with telephone number and fax number	Contract Value In Rupees Equivalent (Give only the value of work assigned to the applicant(s))	Value of balance work yet To be done In Rupee equivalent as on last day of the previous month of tender submission	Date of Completion as per Contract Agreement	Expected date of Completion	Delay if any, With reason	Value of work- yet to be done in 2 months with effect from the first day of the month of tender submission
Total							

Bid Capacity (Bidder shall calculate, mention his bid capacity and enclose the supporting calculation)

A = Rs.

N = years

B = Rs.

Assessed available bid capacity = $2 * A * N - B$

S.No.	Financial year	Total Value of Works done as per audited financial statements
1	FY 2021-22	
2	FY 2020-21	
3	FY 2019-20	

Certificate of the Chartered Accountants / Company Auditor

We, M/s _____, Chartered Accountants/ Company Auditors, certify that the above information is correct.

Name of Chartered Accountants / Company Auditor

Signature and Seal of Chartered Accountants/ Company Auditor

Membership Number & UDIN No. of Chartered Accountants/ Company Auditor

Authorised Signatory

(Name & Designation of Authorised Signatory)

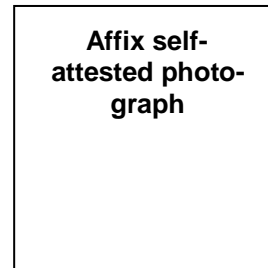
NOTE:

The financial data in above prescribed format shall be certified by Chartered Accountant/ Company Auditor in original under his signature & stamp along with audited financial statements and UDIN and membership no.

Value of existing commitments for on-going works during period of 2 months w.e.f. from the first day of the month of tender submission has to be uploaded by the tenderer in Form=13. These data shall be certified by the Chartered Accountant with his stamp and signature in original with membership number and UDIN along with supporting documents.

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 14: Proposed Personnel



NAME :

EMPLOYEE ID. :

FATHER'S NAME :

DATE OF BIRTH :

PERMANENT ADDRESS :

.....

RESIDENTIAL ADDRESS :

.....

MARITAL STATUS :

EDUCATIONAL QUALIFICATION :

TECHNICAL QUALIFICATION :

EXPERIENCE :

LANGUAGE KNOWN :

NATIONALITY :

CATEGORY :

DATE:

PLACE:



SIGNATURE

(To be filled by contractor)

Attested by authorised person:

Note: A staffing schedule containing the names, qualifications, professional experience and corporate affiliation of all proposed management personnel (above the level of shift supervisor) and specialists for this work. The submission shall include a provisional management structure and organisation chart showing areas of responsibility, relative seniorities and lines of reporting. The proposed staffing plan shall be in conformity with the "Clause 4.3 – Personnel" of tender document

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 15: Obligation/ Compliance to be ensured by Contractor

Sl. No.	Items	Compliance of Contractor (To be filled by contractor)	
		Yes	No
1	License for employing contract labour		
2	Compliance of minimum wages Act by payment of wage on 7th of every month through Bank or in the presence of nominated representative of employer (NMRC Supervisor/manager)		
3 (a)	Compliance of provision of ESI & EPF Act		
3 (b)	Ensure treatment in ESI hospital in case of accident/injuries suffered in performance of work and compensation under ESI Act.		
4	Send Accident report to Regional Labour Commissioner (RLC) & ESI authorities.		
5	Observance of working hours, weekly rest and overtime payments as per minimum wages Act-1948.		

Note: - A Non- filling or "No" by contractor will lead to non-eligibility for contractor in further tendering process.

S.N	Description	Reference Clause	Requirement
I	Latest "date for commencement" of the Works	Clause 8.1 of the GCC	Date given in NOA or Employer's Notice to Proceed
li	Liquidated Damages	Clause 8.5 of the GCC	(i) 0.015% of contract price per day of delay in completion of whole work. (ii) Total maximum limit of LD including sums payable by the employer to designated contractors is 15% as mentioned in GCC.
lii	Insurance for workers/ employees	Clause 15.4 of the GCC	All the contractor's employees shall have to be covered under ESI and ECA as per Special conditions of contract.
Iv	Insurance cover for Contractor's All Risk and other requirements as specified in the GCC	Clause 15 of the GCC	100% of the Total Contract Price.
v	Amount of Third-Party Insurance	Clause 15.3 of the GCC	INR 0.75 Million for any one incident, with no. of incidents unlimited.
vi	Period in which all insurances have to be effected	Clause 15.5 of the GCC	Within 1 week from the "date of commencement"

Signature of authorized signatory of Bidder

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 16: Performa for Clarifications / Amendments on the RFP

Sl. No.	Document	Clause No. and Existing Provision	Clarification required	Suggested Text for the Amendment	Rationale for the Clarification or Amendment

Authorized signatory

Name:

Date:

Name of the Bidder with seal

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 17: Bid Offer/ BOQ (Format)

To

DGM (RS, Ops & Elect)
 Noida Metro Rail Corporation (NMRC) Limited
 Block-III, 3rd Floor, Ganga Shopping Complex
 Noida -201301,
 District Gautam Budh Nagar, Uttar Pradesh

THIS FORM IS NOT TO BE FILLED. THE BIDDERS ARE REQUIRED TO FILL THE FINANCIAL PROPOSAL IN XLS FORMAT AFTER DOWNLOADING THE FORM FROM THE E-PROCUREMENT WEBSITE FOR THIS TENDER DOCUMENT

Sub: Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida..

Dear Sir,

I/we have read and examined the RFP document, general terms and conditions.

I/we hereby quote for the Total Price for Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida..

S. No.	Description	Total Amount in Rs.	Amount in Words
1	Estimated value of work	Rs. 24,82,874.00	(Rupees Twenty Four Lakh eighty two thousand eight Hundred seventy four only) (including GST)

S.N.	Quoted amount (Rs.)	
1	In words	
	In figures	
2	Rebate in % (percentage) if any	
	In words	
	In figures	

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Price Schedule

(It is to be noted that BOQ corresponds to Section-6 Technical Specifications of Tender Document)

(This BOQ template must not be modified/ replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

S.No.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
I	Servo controlled Automatic Voltage Stabilizer				
1	Design, manufacturing, Supply, installation, testing and commissioning of outdoor type 500 KVA servo controlled Automatic Voltage Stabilizer, self-lubricating Carbon Roller Assemblies suitable for unbalanced load with digital micro controlled with Copper Winding, oil cooled type with bye pass arrangement of power drawing and It also includes testing of Transformer oil and subsequent filtering of oil at site before commissioning rest as per technical specification sheet. Note: Minimum 3 years manufacturing warranty	Set	1.00		
2	Unloading, Shifting to foundation, Unpacking, servo controlled Automatic Voltage Stabilizer complete in all respect with all accessories.	Set	1.00		
II	LT CABLES				
	Supply, Laying, testing & commissioning of the following sizes of LT XLPE cables on existing cable trays or on walls / ceiling or in existing ducts including providing & fixing saddles clamps, nuts & bolts as required.				
a	3.5c x 240 sq. mm cable	RM	80.00		
	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
b	3.5c x 240 sq. mm cable	Nos	2.00		
III	Bus bar				
a	Supply and erection of 800 Amp. TPN Rising Mains complete with top end cover plate etc. On angle iron wall brackets complete in all respect.	RM	20.00		
b	Supply and erection of incoming adopter box for mounting 800 Amp. TPN CFS unit including connectors of required capacity on to the rising Mains complete in all respect.	Each	3.00		
c	Supply and Fixing 800 Amp TPN Sandwich aluminium bus bar trunking complete suitable for IP 54 protection with top end cover plate of 1.6mm thick G.I. Sheet with suitable arrangement for fixing etc complete in all respect.	Each	2.00		

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

d	Supply and Fixing of plugging point 400 Amp to 1000 Amp TPN Sandwich aluminium bus bar trunking complete in all respect.	Each	2.00		
e	Supply and Fixing of Bend for 800 Amp sandwich Al bus bar trunking complete in all respect.	Each	3.00		
f	Supply and Fixing of Flange End for 800 Amp sandwich Al bus bar trunking complete in all respect.	Each	1.00		
g	Supply and Fixing of End Cover for 800 Amp sandwich Al bus bar trunking complete in all respect.	Each	1.00		
IV Phase reversal Panel					
a	Design, engineering, manufacture, testing and supply, Installation, testing and commissioning of Outdoor type, Plinth Mounted phase changer unit: • 800 A TP & Solid Isolable Neutral link50KA EDO with Microprocessor based release having protection for O/C, S/C, E/F, Phase Sequence Protection Relay, Timer, Selector Switch-Auto/Manual, Indication Lamps, Control MCB, Two Selector Switch: T-N-C, 4. Metering: Control MCB 6A SP, 10KA Indication Lamps, Digital M.F: With RS485 Port, Meter, CTs, Aux. Relay, suitable Bus bar-Aluminum, CRCA sheet 14 gauge sheet etc. as per IS standard.& technical specification mention in the RFP MAKE: Neptune, Advance, Application etc. of reputed brand	Each	1.00		
IV. EARTHING					
a.	Supply and burring of Safe Earthing Electrode T-39 (Hot-Dip Galvanized), Length up to 3000mm, outer pipe 76mm inner Dia 38mm terminal Dia 12 mm ,outer GI pipe of 16 SWG and inner GI pipe of 12 SWG with Hot Dip Galvanization up to 100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 X 3 GI. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Nos	6.00		
b.	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	RM	18.56		
Electrical work total					

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

IV.	CIVIL WORK				-
a.	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. All works up to plinth level	CUM	3.00		
b.	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level. Cold twisted bars	Kg	50.00		
c.	Disposal of moorum/building rubbish/ malba/ similar unserviceable, dismantled or waste material by mechanical transport including loading, transporting, unloading to approved municipal dumping ground for lead up to 10 km for all lifts, complete as per directions of Engineer-in-charge. Note - item to be applicable in urban areas having directions for restricted hours for movement/ plying of load carrying motor vehicle of 3.5 cum or more.	CUM	6.00		
	CIVIL Work total				0
	SUB-TOTAL C/F TO SUMMARY				

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Please Note:

1. The Bidder with the lowest quoted cost for Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida. in the financial quote (L1 bidder) shall be selected for the award of contract.
2. The Bidder shall be required to quote the amount/rate/percentage in the BOQ.
3. It will be deemed to include all Taxes including GST, Duties, Octroi, Royalty etc., cost of all plants, labour, supervision, materials, transport, all temporary works, erection, maintenance, utility identification, contractor's profit and establishment/ overheads, together with preparation of design and drawings, all general risks, insurance liabilities, compliance of labour laws and obligations set out or implied in the contracts.
4. The work executed against the BOQ items, would be paid on measurement basis.
5. The Financial Bid submitted is unconditional and fulfils all the requirements of the TOR Document.
6. We have completely read and understood the Bid Document. The Financial Tender submitted is unconditional and fulfils all the requirements of the Tender Document.
7. Our Financial Proposal shall be binding upon us subject to the modifications resulting from contract negotiations, up to expiration of the validity period of the Proposal. We understand you are not bound to accept any Proposal you receive.

Signature and Name of the Authorized Person

NAME OF THE BIDDER AND SEAL

Supply, installation, testing and commissioning of 500 KVA SERVO controlled voltage stabilizer, phase reversal panel, bus duct, cable and other associated work at NMRC head office, sector-29, Noida.

Form 18: Bid Details

The following list is intended to help the Bidders in submitting offer which are complete. An incomplete offer is liable to be rejected. Bidders are advised to go through the list carefully and take necessary action.

S. No.	Particulars	Attached Yes / No / Not Applicable	Page no. (Mandatory)
1	Bid Processing Fees		
2	Earnest Money Deposit		
3	Form 1: Letter of Proposal Submission		
4	Form 2: Firm Details		
5	Form 3: Capability Statement		
6	Form 4: Work Experience		
7	Form 5: Financial Capability Details		
8	Form 6: Memorandum		
9	Form 7: Undertaking		
10	Form 8: Undertaking Power of Attorney		
11	Form 9: Saleable Form for Tender Document		
12	Form 10: Declaration of Refund of Earnest Money		
13	Form 11: Undertaking pertaining to Personnel		
14	Form 12: Resources proposed for the O&M - Plant & Equipment		
15	Form 13: Bid Capacity Information		
16	Form 14: Proposed Personnel		
17	Form 15: Obligation/ Compliance to be ensured by Contractor		
18	Form 16: Performa for Clarifications / Amendments on the RFP		
19	Statutory proof of existence as the legal entity		
20	PAN certificate as per legal entity		
21	A copy of the Audited balance sheets and Profit and Loss Statements for the last 3 (three) financial years		
22	Self-attested copy of ITR of last 3 F.Y.		
23	Copy of GST registration certificate, EPF, ESI		
24.	Any other document asked by the Employer if submitted, specify the documents Or Any other document which the Bidder considers Relevant		