EXPRESSION OF INTEREST

FOR

SELECTION OF IMPLEMENTATION AGENCY/BACKEND PARTNER FOR PARTICIPATION IN TENDER FOR

"Design, Supply, Installation, Testing. Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi- Ghaziabad – Meerat Namo Bharat Corridor of NCRTC"

EOI Ref No.BECIL/DGM(BP)/EOI/NCRTC/2026-27
Dated: 17/10/2026

Issued By

Bipin B. Pandey, Deputy General Manager

Broadcast Engineering Consultants India Limited (A Government of India Enterprise)

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Tel: 011 23378823, Fax: 01123379885

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DISCLAIMER

The information contained in this Request for Proposal document (the "EOI") or subsequently provided to Bidder(s), whether verbally or in documentary or any other form by or on behalf of BECIL or any of its employees or advisors, is provided to Bidder(s) on the terms and conditions set out in this EOI and such other terms and conditions subject to which such information is provided. This EOI is not an agreement and is neither an offer nor invitation by BECIL to the prospective Bidders or any other person. The purpose of this EOI is to provide interested parties with information that may be useful to them in making their offers (Bids) pursuant to this EOI. This EOI includes statements, which reflect various assumptions and assessments arrived at by BECIL in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This EOI may not be appropriate for all persons, and it is not possible for BECIL, its employees or advisors to consider the investment objectives, financial situation and particular needs of each party who reads or uses this EOI. Each Bidder should, therefore, conduct its own investigations, actual site/ facilities/location inspections and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information contained in this EOI and obtain independent advice from appropriate sources. Information provided in this EOI to the Bidder(s) is on a wide range of matters, some of which may depend upon interpretation of law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. BECIL accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein. BECIL, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Applicant or Bidder under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this EOI or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the EOI and any assessment, assumption, statement or information contained therein or deemed to form part of this EOI or arising in any way for participation in this Bid Stage. BECIL also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statements contained in this EOI.BECIL may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this EOI. The issue of this EOI does not imply that BECIL is bound to select a Bidder or to appoint the Selected Bidder for the Project and BECIL reserves the right to reject all or any of the Bidders or Bids without assigning any reason whatsoever. The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by BECIL or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder and BECIL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the Bid, regardless of the conduct or outcome of the Bidding Process. In case of any rejection/cancellation, no bidder has any right to claim any compensation or reimbursement to cost. Participation in EOI does not guarantee selection of bidder.

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SECTION – I

INTRODUCTION AND BRIEF DESCRIPTION

1. INTRODUCTION

Broadcast Engineering Consultants India Limited (BECIL), an ISO 9001:2015, 27001:2013, ISO/IEC 2000:2012 certified Mini Ratna Central Public Sector Enterprise (CPSI) was incorporated on 24th March, 1995 under the Companies Act, 2013 (erstwhile the Companies Act, 1956) by Government of India with 100% equity share capital of BECIL held by President of India through Secretary and Joint Secretary of Ministry of Information & Broadcasting.

The Company was initially set up for providing project consultancy services and turnkey solutions encompassing the entire gamut of radio and television broadcast engineering, establishment of transmission facilities, content production facilities, terrestrial, satellite and cable broadcasting in India and abroad. The company has diversified into the fields of Strategic Projects such as Information Communication Technology, Electronic Surveillance (namely CCTV, Access Control, Intrusion, Fire Safety, Hydrants, etc.). Electronic Media contents including films, Sentinel Analytics, Counter Drones/UAV etc. The activities include, but are not limited to Supply, Installation, Testing & Commissioning, Consultancy Services, Technical Audit, Media Analysis, R&D, projects pertaining to Digital India, City Surveillance, Safe City. Smart City, Make in India, Manufacturing, Audio Video & Data Analysis, Cyber Security, Engineering, Procurement & Construction, Project Management Services, Operation and Maintenance, Manpower Placement, AMC and providing total turnkey project for critical information infrastructure.

BECIL has its Head Office in New Delhi, Corporate Office in Noida and Regional Office in Bangalore and Kolkata. BECIL is exploring geographical expansion in many states due to diversification in business portfolios.

Over the years, BECIL has consciously groomed and developed a team of in-house, versatile and dedicated engineers and also cultivated and harnessed a vast reservoir of professionals drawn from various fields of Broadcasting Industry, which include public and private Broadcasters, Defense and Cable Industry. Through this network of resourceful technical professionals, BECIL, has established its pan India presence to serve the needs of the industry.

2. INTRODUCTION OF PROJECT/TENDER

National Capital Region Transport Corporation Limited floated a tender on e-Procurement portal with Bid Number: DM/EL/COR-OF/317 Dated: 12/08/2026 having last date of submission as 26/10/2026 for "Design, Supply, Installation, Testing, Commissioning and Integrated Test of Façade Lighting Work along with 2 years Defect Liability Period (DLP) and further 3 years Annual Maintenance Contract (AMC) beyond DLP at Sarai Kale Khan Namo Bharat Station of the Delhi-Ghaziabad-Meerut Namo Bharat Corridor of NCRTC."

3. ELIGIBLE BIDDERS

That the Prospective Bidder or its Allied firm or sister concern should not be blacklisted/de-barred or put on holiday, by BECIL or any other Public sector Enterprise or a Government Body, as on the date of submission of the bid.

That the Bid submitted by any of the Bidder, who is found to be blacklisted/ debarred or on a Holiday list shall be out rightly rejected.
That in the event, if the Bidder chooses to be discreet and conceal about its status or about the status of any of its Allied/Sister concern of being debarred, then it shall be construed as a misrepresentation of facts and shall lead to an appropriate action by BECIL.

That the Bidder should not be undergoing any liquidation/insolvency proceedings on the due date of the submission of the bid. In case of any change in the status of declaration by the Bidder, the same shall be notified by BECIL to the Bidder in a span of seven days from the date of initiation of proceeding.

4. COST OF BIDDING

The Bidder shall be responsible to bear any costs associated with the preparation and submission of the Bid, and BECIL in no case, shall be responsible or liable for costs, inclusive of but not limited to bank charges, courier charges, site visits, expenses incurred for the purpose of demonstration and representation as desired by BECIL in order to assess the efficiency of the prospective Bidder, or any other expenses incurred for the submission of the Bid. That the Bidder shall be responsible for the costs/expenses regardless of the outcome of the bidding process.

5. ASSURANCE

The successful Bidder shall have to provide requisite documentation and satisfactory assurance of its capability and intention in regard to the supply of the goods and/or performance of the requisite scope of work/services pursuant to the award of the Contract within the time set forth herein

6. CONTENTS OF THE BIDDING DOCUMENT

That the set of Bidding Documents, include the Annexures given herein below in addition to the Invitation for Bid, together with any amendment/addendum

Section I- Introduction and Brief Description
Section II- Schedule of Dates
Section III- General Terms and Conditions
Section IV- Scope of Work and Specification
Section V- Bid Evaluation and Matrix
Section VI- Enclosures and Forms

7. CLARIFICATION OF BIDDING DOCUMENT

Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

8. ADDENDUM/AMENDMENT TO THE BIDDING DOCUMENT

At any time prior to the deadline for the submission of the Bids by the Bidders, BECIL shall have the discretion to amend the bid at its own initiative or in sub-sequence to a clarification sought by the prospective Bidder.

The Amendment / Addendum shall form a part of the Bidding Document pursuant to the General terms and Conditions and the same shall be notified on the said procurement portal, so that the said addendum/amendment becomes binding on all the prospective bidders.

In the event of an Addendum/Amendment to the Bidding Document, the prospective Bidders shall be provided with a reasonable time for the purpose of preparation of their bids.

9. LANGUAGE OF THE BID

That the Bid and all correspondences and communication in connection with this Bid shall be in English language. The supporting documents to be submitted by the Bidder may be in another language provided they are accompanied by a certified translation. However, BECIL may also translate the documents on its own to avert the possibility of any irregularity and ambiguity.

10. EARNEST MONEY DEPOSIT

EMD/ Bid Security: The Bid Security amounting to Rs. 31,25,000/- (Rupees Thirty one lakh twenty five thousand Only) will be submitted with bid by all the bidders in the form of Bank Guarantee issued by any Scheduled bank/ Banker's Cheque/ FDR/ Online Mode (RTGS or NEFT)/Demand Draft. The EMD submitted is refundable and no interest will be paid. The EMD will be refunded, in case work is awarded to BECIL on the submission of Performance Bank Guarantee and in case of unsuccessful bid, immediately after the fact came to BECIL knowledge.

That the Earnest money deposit has been sought with an intent to protect the interests of M/s BECIL against the conduct of the Bidder which shall warrant the forfeiture of the earnest money deposit.

That any Bid not secured in accordance with Earnest Money Deposit will be rejected by BECIL by virtue of being un-responsive.

That the Earnest money deposit of all the Unsuccessful Bidders shall be discharged/returned not later than 45 days after the finalization of the tendering process, whereas the Earnest money deposit of the unsuccessful Bidder shall be discharge upon signing the Work Order/Agreement or upon acknowledging the award and on furnishing of the Performance bank guarantee/ Security deposit.

~~Exemption to MSME, MSE and Startup shall be given as per GoI guidelines.~~

Notwithstanding any contained in the Contract, the Earnest money deposit shall be forfeited in the following circumstances-:

10.1 In the event of withdrawal of bid, by the Bidder during the bid validity period
10.2 If the Bidder is found indulgent in fraudulent/collusive and coercive practice.
10.3 In the event if the Bidder modifies the bid after the due date and time for the submission of the Bids.
10.4 In the case of successful Bidder, if the Bidder fails to sign the work order/Agreement.
10.5 In case if the Bidder fails to furnish the Performance bank guarantee/ security.

11. INTENT AND IMPORTANT ASPECTS OF THE EXPRESSION OF INTEREST

BECIL is interested to submit a competitive tender in response to the Bid Number-DM/EL/COR-OF/317 Dated: 12/08/2026 having last date of submission as 26/10/2026 floated by National Capital Region Transport Corporation Limited, Delhi.

The intent of this EOI is to select a Back-end Technology Partner of BECIL, subsequently work with BECIL for the above-mentioned tender if work gets awarded to BECIL. An MOU/ Agreement will be signed by BECIL with the Back-end Technology partner selected through this EOI, for preparation of bid and/ or participation in the above-mentioned tender.

In case the bid submitted by BECIL against the said tender, is accepted and BECIL receives Work Order/ Agreement from/ with the Client. BECIL may issue a Work Order to the selected agency. In such a scenario, the following conditions will be applicable, which are to be fully taken into consideration by the bidders, prior submitting a response to this EOI: -

11.1 The Back end Technology partner selected through this EOI, may be issued a work order by BECIL, for undertaking the work as per the above mentioned client's tender.

11.2 All terms and conditions of the client's tender, and any subsequent amendments/ corrigenda thereof, will be applicable fully on back to back basis on the Back end technology partner selected through this EOI, including all important terms and conditions like EMD, PBG, Payment Terms, SLA conditions, Liquidity Damages, and any other penalties etc.

12. BANK DETAILS FOR PROVISIONING OF EMD

Beneficiary Name: Broadcast Engineering Consultants India Limited
Bank Name: HDFC Bank
Branch Name: Ansals Fortune Arcade, K- Block, Sector - 18, Noida - 201301, U.P.
Account Number: 50200076192513
Type of Account: DOD Account
IFSC Code: HDFC0000088

13. PERFORMANCE BANK GUARANTEE (PBG)

13.1 In case the said tender is awarded to BECIL, the PBG as applicable shall be furnished by the selected bidder to BECIL on back-to-back basis. The validity of performance security shall initially be for 32 months from the date of issue of Letter of Acceptance. After successful completion of defect liability period, bidder shall have option to reduce the PBG amount up to the 10% of CAMC amount or submit the new PBG having amount of 10% of CAMC charges with the validity period of 3 years plus 2 months. The contractor shall maintain the said performance securities at its own expense and shall remain full force. No interest shall be payable by the NCRTC.

The PBG shall be submitted within the timeline prescribed in the Client's Tender and shall remain valid for the period stipulated therein.

13.2 All payments under the Project to the selected agency shall be made on back-to-back basis only, subject to receipt of corresponding payment from the Client. An advance payment may be made to the selected agency only if BECIL receives an advance from the Client, provided that the selected agency submits a Bank Guarantee (BG) equivalent to 110% of the advance amount to BECIL, in addition to the PBG.

13.3 The decision to engage the successful bidder as the Back End Technology Partner shall be taken by the Competent Authority of BECIL and, accordingly, the respective agreement shall be signed.

13.4 Bidders are advised to go through the Scope of Work and terms & conditions of the said tender to understand the requirements and challenges associated with the project prior to submitting their bids.

13.5 The selected agency shall not subcontract, assign, or transfer any part of its obligations, duties, or responsibilities to any third party without the prior written consent of BECIL. Any attempt to do so shall be considered a material breach, leading to immediate termination without any liability on the part of BECIL.

13.6 Bidders to note that the opening / evaluation of the responses will be subject to accord of Extension of last date of bid submission in the primary tender.

14. The cost incurred towards GeM transaction charges and/or EMD (BG) making charges shall also be recovered from the selected bidder in case the Project is awarded to BECIL by the client.

15. All payments in the Project to the selected agency, shall be on back-to-back basis only subject to receipt of corresponding payment from the client and on the receipt of all the relevant documents including signed delivery challan/receipts by the concerned officer of the respective project office, installation, training, lab test, inspection and verification reports. The payment will be made after adjustments against the damages levied with respect to terms and conditions. No advance will be paid to the bidder, even though BECIL is eligible to get advance from the customer being a front end bidder, unless a BG of 110% value of advance is submitted by the selected agency to BECIL.

16. The selected bidder, who has partnered with BECIL for a particular tender/ project shall not partner with any other bidder for the same tender/project.

17. Any Liquidated Damages and Penalties imposed by the end client in the project shall be imposed in full quantum to the selected agency.

18. Bidders are advised to inspect the site and ascertain the conditions including leads/lifts involved/ approach to vehicles, power, water geo political scenario etc. prior to submitting their bids. Their bid price shall be for completeness of system without any extra cost.

SECTION – II

IMPORTANT DATES (SCHEDULE AND CRITICAL DATES)

ACTIVITY	SCHEDULED DATE & TIME
EOI Number & Date	EOI Ref No. BECIL/DGM(BP)/EOI/NCRTC/2026-27 Dated:17/10/2026
Date of Issue of EOI	Date 17/10/ 2026
Last date and Time for Submission of bid	Date: 21/10/2026 Time:11:00 Hrs
Bid Opening Date and time	21/10//2026 , 12:00 hrs
Place of Submission of EOI/ Opening of EOI	14-B, Ring Road, I.P.Estate, New Delhi-110002
EOI Processing Fee (Non-refundable)	INR 15000 + GST (Proof of submission to be submitted in BID)
Estimated cost	INR 15,62,40,709.50/- (Fifteen crore sixty-two lakh forty thousand seven hundred nine rupees and fifty paise Only)
EMD/ Bid Security	INR 31,25,000/- (Rupees Thirty one lakh twenty five thousand Only). In the form of Bank Guarantee issued by any Scheduled bank/ Banker's Cheque/ FDR/ Online Mode (RTGS or NEFT)/Demand Draft to be submitted at the time of submission of BID. If applicable, physical copy of the instrument should be submitted along with the bid. ~~Relaxation to be given to MSME & Startup as per Government norms.~~
Address for Communication of bids	14-B, Ring Road, I.P.Estate, New Delhi-110002.
Contact details for this EOI	Bipin B. Pandey, Deputy General Manager Bipin.pandey@becil.com, preeti.chaudhary@becil.com Telephone: 011-23378823

NOTE: Broadcast Engineering Consultants India Ltd. reserves the right to amend the EOI tentative schedule and critical dates without giving any explanation whatsoever. Corrigendum may be published in this regard on www.becil.com. Bidders are advised to check the website for updates in this regard.

SECTION – III

1. EOI NOTICE

1.1. Broadcast Engineering Consultants India Limited (BECIL) invites Expression of Interest (EOI), through offline mode, for selection of an Implementation Agency of BECIL, for collaborating with BECIL for preparing a bid and participating in Bid Number- DM/EL/COR-OF/317 Dated: 12/08/2026 having last date of submission as 26/10/2026 floated by National Capital Region Transport Corporation Limited, Delhi.

1.2. **The duly signed Hard Copy of the Bid/ Techno Commercial Proposal is to be submitted in a packed and sealed envelope, in Tender Box, 14-B, Ring Road, I.P.Estate, New Delhi-110002.**

1.3. The EOI must be addressed to the given name and address:

To,
Shri Bipin B. Pandey, Deputy General Manager
Broadcast Engineering Consultants India Limited (BECIL)
14-B, Ring Road, I.P.Estate, New Delhi-110002.

1.4. The EOI must be submitted in English Only. All the documents including the supporting documents/enclosures etc. must be Calibri/Aerial/Times New Roman, font size-12 and fully legible. Supporting documents if in a language other than English must be accompanied by English translated document. The English version shall prevail in matters of interpretation. Each and every page of the EOI should be numbered and mention the relevant page no. of the documents in the checklist. **EOI Documents which are not legible shall be rejected.**

1.5. The representative of agency will require a specific authorization/ board resolution to submit the EOI.

1.6. In case the bidder has any doubt about the meaning of anything contained in the EOI document, she/he shall seek clarification within 1 day of issue of EOI. Except for any written clarification by Shri Bipin B. Pandey, Deputy General Manager BECIL, no written or oral communication, presentation or explanation by any other employee of BECIL shall be taken to bind or fetter BECIL under the contract.

1.7. Bidders shall have to submit an amount of **Rs. 15,000/- + GST** through RTGS/ NEFT to BECIL (**Bank Mandate Form Enclosed at Annexure B)** towards the cost of EOI Document and no other Mode of payment is acceptable. EOI Document is also available at BECIL Office: 14-B, Ring Road, I.P.Estate, New Delhi-110002. The cost of EOI document is non-refundable.

1.8. The Management of BECIL reserves the right to amend or withdraw any of the terms and conditions mentioned in the EOI Document or reject any or all the bids without giving any notice or assigning any reason. The decision of the Director, Broadcast Engineering Consultants India Limited in this regard shall be final and binding on all.

1.9. BECIL reserve the right to amend any term of the EOI at any point of time before the submission and bidder should regularly check the website. Further, BECIL also reserves to increase/decrease/delete/add any BOQ item. Further any amendment done by client after the selection of bidder, all the amendment will be applicable. In case of non-acceptance of such amendment, the EMD submitted will be forfeited by BECIL.

1.10. The bidder should submit the signed Integrity Pact on a plain paper along with the bid.

1.11. The Bidders will have no right to withdraw from the EOI process post submission of their bid without the formal consent of BECIL.

1.12 Participation in the EOI by any bidder will be on "NO COST NO COMMITMENT" basis. The Bidder shall bear all cost associated with the preparation and submission of the Bid including but not limited to Documentation Charges, Bank charges, all courier charges, translation charges, authentication charges and any associated charges including taxes & duties thereon. Further, BECIL will in no case be responsible or liable for these costs, regardless of the outcome of the bidding process.

1.13. For Consortium: Not Applicable

2. SUBMISSION OF EOI

2.1 EOI, complete in all respects, must be submitted offline.

2.2 BECIL may, at its own discretion, extend the date for submission of EOI. In such a case all rights and obligations of BECIL and the Bidders shall be applicable to the extended time frame.

2.3 As the EOI can be submitted only up to the defined date and time, there can't be any late bids. BECIL will not be responsible for any delay in obtaining the terms and conditions of the tender. BECIL will not be responsible for postal delays. Bids received after the due date will not be opened and rejected.

2.4 At any time prior to the last date for receipt of EOI, BECIL may for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the EOI Document by an amendment. The amendment will be notified on BECIL's website http://www.becil.com and should be taken into consideration by the prospective bidders while preparing their EOI.

2.5 The bidders will bear all costs associated with the preparation and submission of their bids. BECIL will, in no case, be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

2.6 The EOI must contain:

2.6.1 Company/bidder profile relevant to EOI.
2.6.2 It should also include details of past experience relevant to the "Scope of Work".
2.6.3 Declaration regarding acceptance of Terms and conditions of EOI.
2.6.4 Declaration of not been blacklisted by any of the Government agency.
2.6.5 Essential information such as Name & address of the agency, Business Name, E-mail id, Fax No. /Telephone No. , Authorized Signatory name, E-mail ID and contact no.

2.7 The agency/ bidder/OEM/Implementation Agency shall ensure that it fulfills the eligibility criteria as desired in the EOI and other essential conditions. Compliance statement of Eligibility criteria with the documents submitted as a proof is to be prepared and submitted. The supporting documents may be with list of existing and past clients with details of services offered, details of similar projects executed.

2.8 The EOI should be duly signed on each page by authorized person. Each page should be properly numbered. Documents authorizing the signatory must accompany the EOI.

2.9 The EOI complete in all respects must be submitted with requisite information and annexure(s). The EOI should be free from ambiguity, change or interlineations. Incomplete EOI will not be considered and is liable to be rejected without making any further reference to agency/ bidder/OEM/Implementation Agency(s).

2.10 Bidders have to take into account any changes/amendments made in the end client's Tender/ RFP through corrigendum till date of submission of bid in response of EOI.

2.11 The bidder shall be ignored, if complete information is not given there-in, or if the particulars and data (if any) asked for are not filled in properly.

2. 12	**Checklist of documents/information to be submitted**	
	(a)	Profile of the company/bidder/firm
	(b)	Certificate of Incorporation (for Company/LLP)
	(c)	Memorandum & Articles of Association/Partnership deed
	(d)	Audited financial statements for the last 3 years
	(e)	Income Tax Return Acknowledgment for last 3 years
	(f)	Certificate of financial capability / credit facility issued by bank.
	(g)	GST Registration Certificate ~~or valid exemption certificate~~
	(h)	Copy of PAN Card
	(i)	Any other relevant registration documents on registration with other appropriate Authorities (ESIC, EPFO, Labour Deptt etc.)
	(j)	Authorization letter in the bidder's letterhead authorizing the person signing the bid for this EOI as Power of Attorney (POA)
	(k)	Undertaking in letter head to indemnify BECIL from any claims / penalties / statutory charges, liquidated damages, with legal expenses etc.
	(l)	Bidders Details as per format
	(m)	All the requisite documents in the prescribed formats placed at Annexures to this EoI
	(n)	Pre-Contract Integrity Pact as per Annexure-A (a) Bidders participating in the EOI have to sign Integrity Pact Those bidders who are not willing to sign Integrity Pact will not be considered for bid opening.
	(o)	(b) All the documents in support of Technical criteria like Experience Certificates, PO, proposed Makes for the solution, Solution architecture (if asked) and other documents as required.
	(p)	Price Offer to BECIL as per Format of the EoI.
	(q)	CA certificate with CA's registration number, seal and UDIN number clearly stating the turnover for the previous three financial years, audited balance sheets and Profit & Loss statements for previous three financial year
	(r)	Undertaking for bankruptcy and insolvency
	(s)	Undertaking for blacklisting
	(t)	Scanned original copy of kit testing report for all the products/kit items
	(u)	Self-declaration of contact details of key members of bidders organization/firm
	(v)	Manufacturer's Authorization Form (MAF) and applicable BIS/IS Certificates
	(w)	Copy of valid ISO certificates
	(x)	Proof of submission of EMD

3. OPENING OF EOI

3.1. The bids submitted against this EOI shall be opened on 21/10/2026 ,12:00 hrs. BECIL Reserves the right to change the date of opening of bid.

3.2. Bidders who wish to attend opening of EOI may visit BECIL for the same at the designated time, with authorization in proper format on bidder's letter head.

4. GENERAL TERMS & CONDITIONS OF EOI

4.1 The EOI Processing Fee, technical bid and financial bids are to be placed in separate sealed envelopes, super scribed with words "**EOI Processing Fee**", "**Technical Bid**" and "**Financial Bid**". All the three sealed envelopes as mentioned above are to be placed inside a single sealed envelope named as

Response for EOI No. BECIL/DGM(BP)/EOI/NCRTC/2026-27
Submitted by: [Firm/Company name]

4.2 All bids are to remain valid for minimum of 180 days from the date of submission. BECIL reserve the right to seek the extension of bid validity.

4.3 BECIL reserves the right to solicit additional information from bidder/OEM/Implementation Agency to evaluate which bid best meets the need of the Project. Additional information may include, but is not limited to, past performance records, lists of available items of works which will be done simultaneously with the project, on-site visit and evaluations by BECIL personnel, or any other pertinent information. It will be vendor's responsibility to check for updated information on website https://www.becil.com. BECIL reserves the right to cross verify the information directly with client.

4.4 BECIL reserves the right to waive off any deviations, accept the whole or part thereof or reject any or all bids and to select the bidder/OEM/Implementation Agency(s) which, in the sole opinion of BECIL, best meets the project's interest. BECIL also reserves the right to negotiate with potential bidder/OEM/Implementation Agency(s) so that its best interest to fulfill the need of project is served.

4.5 BECIL reserves the right to reject any and all proposals, to negotiate all terms of any agreement resulting from this EOI, and to request additional information from bidder.

4.6 All information contained in this EOI, or provided in subsequent discussions or disclosures, is proprietary and confidential. No information may be shared with any other organization, including potential sub-contractors, without prior written consent of BECIL.

4.7 In case the agency selected through EOI goes into liquidation or undergoes a change in business/management, it will be intimated to BECIL & the selected agency will fulfill its commitment in case order is awarded to them. In case the selected agency is not able to perform, the work under reference will be done at risk & cost of the selected agency (successful bidder). EMD or PBG as the case may be will be forfeited by BECIL.

4.8 Any dispute or difference or claim arising out of or in relation to this EOI, including the construction, validity, performance or breach thereof, shall be settled or decided by CMD/Director, BECIL or by any other person to be nominated by CMD/Director.

5. Relationship between the parties

Nothing contained herein, shall be construed as establishing a relation of master and servant or of Agent and Principal as between the Bidder/Agency and BECIL.

6. Intellectual property rights

6.1 Deliverable, outputs, plans, drawings, specifications, designs, reports and other documents and software submitted by the Bidders under this EOI and subsequent to this EOI in relation with this EOI shall become and remain the property of BECIL/procuring entity and subject to laws of copyright, must not be shared with third parties or reproduced, whether in whole or part, without BECIL's/ the procuring entity's prior written consent.

6.2 The Bidder shall, not later than upon termination or expiration of this Contract and/or subsequent Agreement/Contract signed with the Bidder, deliver all such documents and software to BECIL/the procuring entity, together with a detailed inventory thereof.

6.3 The Bidder shall not incorporate any materials, technology or any item or thing that involves the use of intellectual property rights or proprietary rights that the Bidder does not have the right to use or that may result in claims or suits against BECIL arising out of claims of infringement of any intellectual property rights or other proprietary rights.

6.4 The Bidder shall perform all acts necessary to obtain and continue to have all necessary licenses, approvals, consents of third parties free from any encumbrances and all necessary technology, hardware and software to enable it to perform its obligations under this Contract. If license agreements are necessary or appropriate between the Bidder and third parties for purposes of enabling, enforcing or implementing the provisions hereinabove, the Bidder shall be under an obligation to enter into such agreements at its own sole cost, expense and risk.

7. Land and border provision

The Undertaking at **ANNEXURE-L** shall be submitted by the Bidder in line with the guidelines issued vide the Office Memorandum, No. F. No. 6/18/2019 dated 23.07.2020, by the Department of Expenditure, Ministry of Finance, and Govt. of India.

8. Indemnity

8.1 The Bidder shall indemnify, save, hold harmless and defend BECIL and its officers, servants, employees and agents promptly upon demand and at its expense, from and against any and all suits, proceedings, actions, demands, losses, claims, damages, liabilities, costs (including reasonable attorney's fees and disbursements) and expenses (collectively, "Losses") to which BECIL may become subject, insofar as such losses arise out of, in any way relate to, arise or result from:

a) Deficiency in the Bidder's performance of its scope of service or breach of any of its obligations or scope of work

b) Actions by the Bidder that causes BECIL to be in indirect or direct consequential breach of the main contract

c) Any claims by employees, suppliers, creditors or other persons in a relationship with the Bidder

d) Any claims of infringement, misappropriation or otherwise by third parties in regard to the execution of the scope of work by the Bidder.

9. Code of Integrity

No official of BECIL or the Bidder shall act in contravention of the codes which includes Prohibition of:

a) Offering of any bribe or undue gratification in any form to BECIL or its officials, or indulging in any corrupt practices.

b) Any omission, or misrepresentation that may mislead or attempt to mislead so that a financial or other benefit may be obtained, or any necessary obligation or pre-requisite may be avoided.

c) Improper use of information provided by BECIL to the Bidder with an intent to gain an unfair advantage in the procurement process or for personal gain.

d) Any financial or business transactions between the Bidder and any official of BECIL related to EOI or execution process of contract, which can affect the decision of BECIL directly or indirectly.

e) Any coercion or any threat to impair or harm, directly or indirectly, any party or its property to influence the procurement process.

f) Obstruction of any investigation or auditing of a procurement process.

g) Making false declaration or providing false information for participation in an EOI Process or to secure a contract.

10. Conflict of Interest

Any Bidder having a conflict of interest, which substantially affects fair competition, shall not be eligible to bid in this EOI. Bids found to have a conflict of interest shall be rejected as non-responsive. Bidder shall be required to declare the absence of such conflict of interest in Form Declarations. A bidder in this EOI Process shall be considered to have a conflict of interest if the bidder:

a) Directly or indirectly controls, is controlled by or is under common control with another Bidder; or

b) Receives or have received any direct or indirect subsidy/ financial stake from another Bidder; or

c) Has the same legal representative/ agent as another Bidder for purposes of this bid. A Principal can authorize only one agent, and an agent also should not represent or quote on behalf of more than one Principal. However, this shall not debar more than one Authorized distributor from quoting equipment manufactured by an Original Equipment Manufacturer (OEM), in procurements under Proprietary Article Certificate; or

d) Has a relationship with another bidder, directly or through common third parties, that puts it in a position to have access to information about or influence the bid of another Bidder or influence the decisions of the Procuring Entity regarding this EOI process; or

e) Participates in more than one bid in this tender process. Participation in any capacity by a Bidder (including the participation of a Bidder as sub-contractor in another bid or vice-versa) in more than one bid shall result in the disqualification of all bids in which he is a party. However, this does not limit the participation of a non-bidder firm as a sub- contractor in more than one bid; or

f) Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services that it provided (or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm), for the procurement planning (inter-alia preparation of feasibility/ cost estimates/ Details Project

Report (DPR), design/ technical specifications, terms of reference (ToR)/ Activity Schedule/ schedule of requirements or the EOI Document etc.) of this EOI process; or has a close business or family relationship with a staff of the Procuring Organization who:

(i) are directly or indirectly involved in the preparation of the EOI document or specifications of the EOI Process, and/or the evaluation of bids; or

(ii) Would be involved in the implementation or supervision of resulting Contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the EOI process and execution of the Contract.

11. Undue influence

11.1 The Agency/Bidder undertakes that it has not given, offered or promised to give, directly or indirectly, any gift, consideration, reward, commission, fees, brokerage or inducement to any person in service of the BECIL or otherwise in procuring the Contracts or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of the present Contract or any other Contract with the Government of India for showing or forbearing to show favor or disfavor to any person in relation to the present Contract or any other Contract with the Government of India.

11.2 Any breach of the aforesaid undertaking by the Agency/Bidder or any one employed by it or acting on its behalf (whether with or without the knowledge of the Agency) or the commission of any offers by the Agency or anyone employed by him or acting on his behalf, as defined in the Bharatiya Nyaya Sanhita, erstwhile known as the Indian Penal Code, 1860 or the Prevention of Corruption Act, 1986 or any other Act enacted for the prevention of corruption shall entitle BECIL to cancel the contract and all or any other contracts with the Agency and recover from the Agency the amount of any loss arising from such cancellation, from the present or from any other contract with BECIL.

12. Unlawful/Unethical Practices

12.1 If the Contractor/ Bidder has engaged in corrupt, fraudulent, collusive and coercive practices or defaulted commitments under integrity.

12.2 Any intentional omission or misrepresentation in the documents submitted by the Bidder for the purpose of due diligence or for the execution of any act essential for the execution of the Project. If the Bidder uses intimidation / threats or bring undue outside pressure on BECIL or any of its official for acceptance / performances of the deliverable/qualified work under the contract:

13. Penalty for breach of integrity, conflict of interest and undue influence

13.1 Forfeiture of Bank guarantee or any other bond or bid security submitted by the Bidder.

13.2 Cancellation/ termination of the Contract with the liberty to recover the accrued losses/damages by the Bidder including imposition of penal damages.

13.3 Initiation of Arbitration /legal proceedings to recover losses or damages incurred by BECIL due to the violation of ethical practice or use of undue influence by the Agency.

14. Blacklisting/ Debarment

The Bidder/Contractor shall be debarred/blacklisted from bidding for the contract/tender floated by BECIL for a period of two years, for violation of the code of integrity, for undue influence as well as for the breach of any other terms and conditions of the tender as per the General Financial Rules 2017 and the Guidelines for debarment of firms from bidding issued by the Department of Expenditure, Ministry of Finance no. F1/20/2018 –PPD dated 02.11.2021.

15. Risk and cost clause

15.1 In case of persistent breach/default of the terms and conditions of the Contract and due to abnormal delay (beyond the maximum late delivery in the Liquidated damages clause) in supplies, defective supplies or non-fulfillment of any of the terms and conditions of the EOI and the Work Order, BECIL may cancel the contract/Work Order in full or part thereof, and will procure supplies/equipment's or ensure the execution of work or any pending service in case of service contract from other willing vendor at the risk and cost of the Bidder.

15.2 Risk & Cost Clause, in line with Conditions of Contract may be invoked in any of the following cases:

15.3 Bidder's poor progress of the work vis-à-vis execution timeline as stipulated in the Contract, backlog attributable to Bidder including unexecuted portion of work/ supply does not appear to be executable within balance available period.

15.4 Withdrawal from or abandonment of the work by Bidder before completion of the work as per contract.

15.5 Non completion of work/ Non-supply by the Bidder within scheduled completion/delivery period as per EOI or as extended from time to time, for the reason attributable to the Agency/ Bidder.

15.6 Assignment, transfer, subletting of Contract by the Agency/Bidder without BECIL's written permission resulting in termination of Contract or part thereof by BECIL

16. Penalties

16.1 In the event of any penalties, deductions, disincentives, or charges levied by the Client due to poor or substandard quality of work, non-compliance with service standards, or any deficiencies related to the assigned scope of work, the same shall be recovered from the Bidder.

16.2 The Bidder shall bear the full financial responsibility for such penalties or deductions imposed on BECIL by the Client and will not be entitled to claim any reimbursement or adjustment for the same.

17. Confidentiality

17.1 The Bidder recognizes, accepts and agrees that disclosure of Confidential information to the Staff shall be only on a need-to-know basis and only those staff who are involved in rendering the services and need to have access would alone be informed of Confidential information.

17.2 The Bidder recognizes, accepts and agrees that all tangible and intangible information obtained or disclosed to the Bidder's and/or its staff, including all details, documents, data, business/ customer information and the BECIL 's practices and trade secrets (all of which are hereinafter collectively referred to as "confidential information") which may be communicated to the Bidder 's and/or its facility staff may be privy under or pursuant to this Contract and/or in the course of performance of the Bidder 's obligations under this Contract shall be treated, as absolutely confidential and the Bidder irrevocably agrees and undertakes and ensures that all its facility staff shall keep the same as secret and confidential and shall not disclose the same at all in whole or part to any Person or persons (including legal entities) an any time or use nor shall allow information to be used for any purpose other than that as may be necessary for the due performance of the Bidder's obligations hereunder except when required to disclose under the due process and authority of law.

18. Right to inspection

18.1 That BECIL and its field officers or its Auditors, shall have the right to carry out inspection checks and tests, and do audit of the Bidder's premises, personnel and records relating to the project in order to ensure there is no compromise on the quality of goods/services provided by the Bidder to the BECIL and its Client. The BECIL has a right to review and monitor the security practices and control procedures adopted by the Bidder. The Bidder shall produce and make available all such books, records, information, etc., related to project work for the purpose of Inspection/ audit as sand when required.

18.2 That BECIL shall have the right to review and monitor the performance of the Bidders on a continuous basis system integrator shall furnish necessary particulars, statements, etc., as desired by the BECIL in a periodical manner for the purpose of assessment of their performance.

19. Terminations

19.1 Termination of Contract/ Empanelment by BECIL due to unsatisfactory performance

a) If the Bidder refuses or fails to execute the specified quantum of work or any separate part thereof with diligence or ensure its completion within the time specified in the EOI , or subsequent work order issued thereto, then it shall be open to BECIL at its option by written notice to the Agency/Bidder to:

b) To terminate the contract without prejudice to any other remedy available under the Contract. That a notice of cure, highlighting the deficiency or problem shall be served on the Agency /Bidder by BECIL, with an opportunity to cure the same within a period of 7 days. That on the non-resolution of deficiency, a notice of termination shall be served on the Agency/Bidder and the Contract shall be deemed terminated after a period of 15 days from the date of notice of termination.

19.2 Termination due to Breach

a) BECIL may, without prejudice to any other remedy available for the breach of contract, may terminate the contract in sub-sequence to non –resolution of deficiency after the service of a notice of cure with a window period of fifteen days. After the end of the cure period, a 15 (fifteen) days' notice shall be served on the Agency/ Bidder, and the contracts shall be deemed terminated after the end of the period of fifteen days from the date of notice of termination.

b) The following sub-clauses shall attract the provision of termination, on the occurrence of the following events -:

(i) If the Bidder has abandoned or repudiated the Contract;

(ii) If the Bidder has without valid reason failed to commence work on the project promptly;

(iii) If the Bidder has persistently failed to execute the works/express deliverable in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause;

(iv) If the Bidder defaults in proceeding with the works/job with due diligence and continues to do so after a notice in writing of fifteen (15) days from BECIL;

(v) If the Bidder has obtained the contract as a result of undue of influence or adopted unethical means/ corrupt practices.

(vi) if the information submitted/furnished by the Bidder is found to be incorrect;

19.3 Termination due to Insolvency

a) If the Agency/Bidder dissolves or become bankrupt or insolvent or cause or suffer any receiver to be appointed for its business of any assets thereof compound with his Creditors, or being a corporation commence to be wound up, not being a member's voluntary winding up for the purpose of amalgamation or reconstruction, or carry on its business under a Receiver for the benefits of its Creditors any of them, then BECIL shall be at liberty:-

b) To terminate the contract forthwith upon coming to know of the happening of any such event as aforesaid by a fifteen day notice in writing to the Agency/Bidder or to give the Receiver or liquidator or other person, the option of carrying out the contract subject to its providing a guarantee up to an amount to be agreed upon by BECIL for due and faithful performance of the contract.

19.4 Termination for Convenience

BECIL can terminate the Agreement by serving a 30 day notice without assigning any cause or reason to the Bidder/ selected agency. The contract shall be deemed terminated after a period of 30 days from the date of termination notice.

20. Post termination responsibility

20.1. In all cases of termination herein set forth, the obligations of BECIL to pay shall be limited to the period up to the date of termination, subject to the receipt of such payment from the Client.

20.2. That any pending bills raised by the Bidder, prior to or post the termination of the Contract on account of the breach of the terms and conditions of the contract, shall be put on hold, till the time, the corresponding payment is received from the Client and any amount deducted by the Client against the bills raised by BECIL shall be consequently deducted from the bills raised by the Bidder respectively.

20.3. The Bidder shall forthwith stop any of its work then in progress, except such work as BECIL may, in writing, require to be executed at the designated site/premises.

That in the event of termination under clause 16.1 and 16.2 the whole or part of the performance security furnished by the Agency/Bidder is liable to be forfeited without prejudice to the right of BECIL to recover from the Agency/Bidder any accruing or incurred losses or damages, on account of termination of contract due to unsatisfactory performance/ delay in execution of work.

21. Notices

Any notice, invoice, approval, advice, report or notification in connection with this Contract shall be in writing and any notice or other written communication pursuant hereto shall be signed by the party issuing the same and shall be addressed to the BECIL or the Bidder and may be given by delivering the same by hand or sending the same-by prepaid registered mail, official e-mail or facsimile to the relevant address forth below or such other address as each Party may notify in writing to the ether Party from time to time. Any such notice given as aforesaid shall be deemed to be served or received at the time upon delivery (if delivered by hand) or upon actual receipt (if given official e-mail or facsimile) or Fifteen (15) clear days after posting (if sent by post) at the Party's principal or registered office address as set out below:

Broadcast Engineering Consultants India Limited,
14-B, Ring Road, I.P.Estate, New Delhi-110002. Email:
bipin.pandey@becil.com

22. No waiver

No waiver of any term, provision, or condition of this Contract, whether by conduct or otherwise, in any one or more instances, will be deemed to be or be construed as a further or continuing waiver of any such term, provision, or condition or as a waiver of any other term, provision, or condition of this Contract, unless the same is agreed upon and recorded in writing with mutual consensus of both the parties.

23. Amendment

Unless otherwise stated expressly, this Contract shall be modified only by an instrument in writing duly executed by both the parties.

24. Arbitration

24.1 Conciliation of Dispute

a. Any dispute(s) /difference(s)/issue(s) of any kind whatsoever between/amongst the Parties arising under/out of/in connection with this contract shall be settled mutually and amicably between the Parties, within a time span of **thirty days** from the date of invocation of dispute vide a written notice by the aggrieved party. The Aggrieved Party shall notify the other party in writing about such dispute(s)/difference(s)/issue(s) between/amongst the Parties and that such a Party wishes to refer the dispute(s)/ difference(s)/issue(s) to Conciliation. Such Notice/Invitation for Conciliation shall contain sufficient information as to the dispute(s)/ difference(s)/issue(s) to enable the other Party to be fully informed as to the nature of the dispute(s)/ difference(s)/issue(s), as well as the amount of monetary claim.

b. That in the event of reference of dispute for Conciliation, a committee comprising of two members, nominated by each party i.e. the Bidder and BECIL respectively shall try to amicably resolve/settle the dispute.

24.2 Reference of Dispute to Arbitration proceeding post conciliation

a) In the event of failure in mutual resolution of the issue, any dispute(s)/ controversy(s)/ issue(s) arising out of or in connection with the contract, including any question regarding its existence or validity shall be referred to and finally resolved by Arbitration administered by the (DIAC) Delhi International Arbitration Centre as per the Delhi International Arbitration Centre proceeding Rules 2023.

b) The Aggrieved party wishing to refer a dispute to Arbitration shall give a notice to the Defaulting Party specifying all the points of dispute(s) with details of corresponding the claim amount.

c) The Arbitration Proceeding shall commence within a span of **thirty days** from the date of receipt of Invocation Notice complete in all respects as mentioned above,

d) The dispute(s)/ difference(s)/controversy(s) shall be adjudicated by a single/sole Arbitrator empanelled with the Delhi International Arbitration Centre.

e) The seat of Arbitrations shall be at New Delhi and the Arbitration proceeding shall be conducted in English.

f) The award of Sole Arbitrator shall be final and binding on the parties and unless directed/awarded otherwise by the Sole Arbitrator, the cost of arbitration proceedings shall be shared equally by both the parties.

g) The provision of the Arbitration and Conciliation Act, 1996 as amended and applicable from time to time shall apply to the Arbitration proceedings under this Contract.

h) That any claim of damage(s) or losses(s) incurred by BECIL as a consequence of the invocation of the litigation/arbitration proceeding owing to the suspension or abandonment of work by the Bidder/Agency shall be reimbursed by the Bidder/Agency.

i) That if BECIL considers that a dispute under this contract, involves an issue that is related to a dispute under the main contract., then in that event, the Bidder shall assist, and support BECIL, during the course of arbitration/ legal proceedings emanating from the main contract. Then in that event of initiation of arbitration proceeding, under the main contract, no dispute tied to the main contract, shall be concurrently referred by the Bidder.

25. Jurisdiction

This Agreement, and any dispute or claim (including non-contractual disputes or claims) arising out of or in connection with it or its subject matter or formation, shall be governed by, and construed in accordance with, the laws of India. The Courts at Delhi shall have the exclusive jurisdiction to entertain any matter arising out of or in relation to this Contract.

26. Force majeure

26.1 For the purpose of this Contract, the term "Force Majeure" shall mean an event which is beyond the reasonable control of a Party, is not foreseeable, is unavoidable and not brought about by or at the instance of the Party claiming to be affected by such events and which has caused the non-performance or delay in performance ,and which makes a Party's performance of its obligations hereunder impossible or impractical as reasonable to be considered impossible in the circumstance, inclusive of but not limited to war, riots, civil disorder, earthquake, fire, strikes, lockouts or other industrial action (except where such strikes lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent) , confiscation or nay other action by the Government Agencies.

26.2 Force Majeure shall not include (i) any event which is the caused by the negligence or intentional action of a Party or by of such Party's agents or employees, nor (ii) any event which a diligent party could reasonably have been expected both to take into account at the time of the acceptance of the work order under this EOI, and avoid or overcome with persistent effort in carrying out its respective obligations.

26.3 In the case of failure to perform this Agreement due to any force majeure, neither party shall be liable for such failure, nor shall this Agreement be terminated automatically, if the persistence of such force majeure event continues for more than three months. In the case of failure to perform any part of this Agreement due to any force majeure, the party suffering from such force majeure may be exempted from corresponding liability to the extent of the impact of such force majeure. However, such party shall continue to perform other obligations under this Agreement which have not been affected by such force majeure.

27. Subcontracting

The Bidder shall not subcontract the entire or any portion of the work to be performed by it, without the prior written consent of BECIL.

28. Extension of time

28.1 It is hereby agreed that BECIL shall by mutual agreement update and extend the timeline/ Milestone for the completion of work after discussion with the Client and its officials.

28.2 Any period within which Bidd er is unable to complete the work or perform its obligations due to persistence of force majeure event, shall be extended for a period equal to the time during which the Bidder was unable to perform such action.

28.3 Any extension of time agreed upon mutually shall be documented in writing and signed by both the parties to be affected.

29. Assignment

29.1 All terms and provisions of this EOI and subsequent Contract/ Agreement / work order with the successful Bidder shall be binding on both the parties and their respective successors and permitted assigns.

29.2 Subject to clause mentioned above, the selected Agency shall not be permitted to assign its rights and obligations, under the Contract/ Agreement / work order, to any third party.

29.3 BECIL may assign or nominate all or any part of the Contract/ Agreement / work order and the Agency shall be a party to such novation, to any third party contracted to provide outsourced services to BECIL or any of its nominees.

30. Severability

If any provision of the Contract/ Agreement / work order, or any part thereof, shall be found by any court or administrative body of competent jurisdiction to be illegal, invalid or unenforceable; the illegality, invalidity or un-enforceability of such provision or part provision shall not affect the other provisions of the Contract/ Agreement / work order or the remainder of the provisions in question which shall remain in full force and effect. The concerned Parties shall negotiate in good faith to agree to substitute for any illegal, invalid or unenforceable provision with a valid and enforceable provision which achieves to the greatest extent possible the economic, social, legal and commercial objectives of the illegal, invalid or unenforceable provision or part provision.

31. Entire contract

The Contract/ Agreement / work order with all Appendices and Schedules appended thereto, contents and scope/ specifications of the EOI , all the corrigendum's, response to queries etc. that may be issued against this EOI and the Bidder's offer including presentation and all supporting documents shall constitute the entire Contract/ Agreement / work order between the Parties with respect to their subject matter, and as to all other representations, understandings or agreements which are not fully expressed herein, provided that nothing in this clause shall be interpreted so as to exclude any liability in respect of fraudulent misrepresentation.

32. Liquidated damages/Penalty

32.1 If the Bidder fails to achieve the completion of the work in accordance with the scheduled completion date as given in the Contract or the subsequent Work Order issued thereto, BECIL may without prejudice to any other right or remedy available to it as under the Contract or Law:

32.2 Any applicable penalties/liquidated damages for delay and non-performance shall be deducted from the due milestone payments.

32.3 The amount towards Liquidated Damages shall become leviable from the scheduled completion date or from the expiry of the extension, if any, given by BECIL without the levy of Liquidated damages.

32.4 BECIL may without prejudice to its right to effect recovery by any other method, deduct the amount of Liquidated Damages from any money belonging to the Bidder which has become due or payable (which shall also include BECIL's right to claim such amount against Bidder's Bank Guarantee)

32.5 Any such recovery of Liquidated Damages shall not in any way relieve the Bidder from any of its obligations to complete the works or from any other of its other obligation and liabilities under the Contract.

32.6 LD/Penalty strictly as per the penalty clause mentioned in the client's RFP.

33. Power of attorney

Duly filled Technical Bid with proper seal and signature of authorized person on each page of the bid submitted. The person signing the bid should be the duly authorized representative of the firm/ company whose signature should be verified and certificate of authority should be submitted. The power of attorney or authorization or any other document consisting of adequate proof of the ability of the signatory to bind the firm/ company should be annexed to the bid.

SECTION – IV
SCOPE OF WORKS

1. SCOPE OF WORK

1.1. The scope of work under these specifications generally covers Design, Supply, fabrication, installation/fixing, necessary touch up painting, testing and commissioning of Electrical works and maintenance during 2 year DLP The contractor shall carryout and completes the said work under this contract in every respect in conformity with the current rules and regulations of the Local Electricity Authority, the Indian Standard Institution, Indian Electricity Rules & Act and to all the provisions of the relevant Government Legislation and with the directions of and to the satisfaction of the Employer or his representative. The contractor shall furnish all labour and install all materials, appliances, equipment (except those items which will be supplied by the owner to the contractor at site) necessary for the complete provision and testing of the installation as specified and approved shop drawings of contractor. Exact locations, levels and distances etc. shall be governed by dimensional parameters actually available at site. Any material, appliances, equipment not specifically mentioned herein but which are necessary and customary to make complete installation properly connected and in working condition shall be supplied and installed without any extra cost. The work shall include all incidental jobs / minor civil works connected with installation such cutting, drilling and grouting etc following electrical works.

1.1.1 Conducting, wiring, supply & fixing of modular type switches for lighting, etc.
1.1.2 Conducting, wiring, supply & fixing of modular type sockets and switches wherever required and as per drawings.
1.1.3All Lighting Distribution Boards with system as required and mentioned in BOQ.
1.1.4 1.1kV grade power cables and control cables as per prevailing specification, cable trays, raceways and ducting
1.1.5 Protective earthing
1.1.6 Interfacing with Operator and any other NCRTC representatives
1.1.7 Preparation of Drawings and Design Verification (Including Dialux etc.) complete as required.
1.1.8 Prepare and submit the As-Built-drawings after completion of Site Work.
1.1.9 Testing of equipment's at manufacturers work prior to dispatch.
1.1.10 Testing at site as required.
1.1.11 Loading, transportation and unloading.
1.1.12 Protection of stored materials/ installed work against damage due to dirt, sun and rain including providing tarpaulin/ PVC sheet covers as required.
1.1.13 Providing security arrangements/watch & ward for stored materials and installed works to guard against pilferage including providing temporary covers on conduit outlets after drawing of wires before fixing switches/ fittings etc.
1.1.14 All incoming and outgoing cables and wires shall be properly labelled as per the layout/schematic drawings for easy identification. Details of circuits being fed from DBs shall be affixed at the back of the door of each DB.
1.1.15 Housekeeping and clearing of work area during the tenure of contract.
1.1.16 Demobilization and clearing of all temporary work/facilities after completion of work at site and cleaning work before handing over. The Contractor shall deposit applications as prescribed with the appropriate Authorities on behalf of NCRTC for obtaining sanctions/approvals/permissions/ clearances as detailed below and shall arrange for timely obtaining of the sanctions/ permission/ approvals/ clearance as required. All expenses required to be incurred for obtaining the statutory approvals shall be borne by the Contractor. Only Statutory fees shall however be reimbursed by the NCRTC against duly signed/stamped receipts
1.1.17 Obtaining clearance from Electrical Inspector (required if any) before and after completion of work • LOTO (Lockout) Procedures should be followed as per OSHA 1910.147 and BS7671

standard.
1.1.18 Contractor shall prepare the testing and commissioning procedures documents and submit for approval min 15 days before starting any testing activity. No testing activity will be acceptable before approval of testing procedures which details all testing requirements and parameters in compliance with technical specification and applicable standard requirements for each specific stage of testing. • Bidder shall be a licensed Electrical Contractor possessing a valid Contractor's license of appropriate class in the state, employing supervisors and skilled workers having valid permits as per the regulations of Indian Electricity Rules and local Electrical Inspectors requirements.
1.1.19 Work shall be carried out by Contractor shall take prior approval from Employer/Employer's Representatives before Contractor mobilization at Site, Necessary permission to execute the work to obtained from Operator and generally the work will be carried out in non-revenue hours except ground level.
1.1.20 The required power supply for Façade light will be available at Auxiliary Substation (ASS) of Sarai Kale Khan Namo Bharat station with 63A MCCB in LT Panel.
1.1.21 The contractor shall also require to installed the façade light/decorative light in the station area/premises other than mentioned in the BOQ schedule as per the direction of Engineer in charge/NCRTC representative.

1.2 For detailed scope of work of the project & the Bill of Material, the bidders may refer the Client's Tender document, and its amendments & corrigenda issued subsequently (if any); Tender details references are as below and the same is also attached along with this EOI. (Bidders are instructed to check for any new corrigendum/amendments etc. before bidding)

Client's Tender Reference No. DM/EL/COR-OF/317 dated 12.08.2026
Website: https://eprocure.gov.in/eprocure/app

SECTION –V

ELIGIBILITY CRITERIA AND EVALUATION

1. PREQUALIFICATION CRITERIA OF BIDDERS

Sl. No	Requirement	Supporting Documents
	General	
1.1	The Bidder should be Company registered under the Companies Act 1956/ 2013 OR Partnership firms registered under Limited Liability Partnerships (registered under LLP Act, 2008) OR Partnership firms registered Under Indian Partnership Act, 1932 registered in India under companies Act 1956 or 2013. **Note:** Joint Ventures or Consortium of any kind is not allowed.	**Copy of the following documents needs to be submitted along with the bid:** ➢ Copy of Certificate of Incorporation issued by registrar of Companies/ Partnership Deed/ Registration ➢ Copy of valid GSTIN Certificate. ➢ Copy of PAN/ TAN ➢ MOA and AOA
1.2	The Bidder should have an average annual construction turnover of not less than Rs 2.23 Crore in the previous three audited financial years i.e., FY-2022-23, FY 2023-24 and FY 2024-25.	CA certificate with CA's Registration Number, Seal and UDIN number clearly stating the turnover for the previous three audited financial years, Audited Balance Sheets and Profit & Loss Statements for previous three audited financial years OR from the date of incorporation, whichever is later, to demonstrate the current soundness of the Bidder's financial position. As a minimum, the Bidder's net worth for the last audited financial year calculated as the difference between total assets and total liabilities should be positive.
1.3	Positive Net-Worth for each of last three Audited Financial Years i.e., FY: 2022-23, 2023-24, 2024-25.	Copy of Annual Audited Financial Statements or Certificate by chartered Accountant with specific mentioning that the net-worth so certified is based on the audited accounts of the company/ firm incl. LLP
1.4	The bidder should not be insolvent, in receivership, bankrupt or being wound up, not have had their business activities suspended and not be the subject of legal proceedings for any of the foregoing.	Certificate by the CA. Signed copy of CA certificate issued after the date of issue of EOI will be considered.
1.5	Bidder must have the solvency / credit facility / financial capability from the scheduled commercial bank for minimum value of INR 3.90 crores.	Solvency Certificate not older than 6 months from the date of publishing of bid.
1.6	Bid Security / Earnest Money Deposit (EMD)	The bidder shall furnish Bid Security/EMD of INR 31.25 Lakhs as specified in the tender. Bid Security (BG, Demand Draft, Banker's Cheque FDR and Online mode (RTGS/NEFT) in original

		for a period of forty-five days beyond the final bid validity period. The bidder must submit the bid security (original) in physical form.
1.7	**Construction Experience** Participation as a contractor or JV partner in One Single Contract/ work, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 3.56 Crore in the similar nature work mentioned below. OR B. Participation as a contractor or JV partner in Two Single Contracts/ works, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 2.23 Crore in each Contract in the similar nature work mentioned below. OR C. Participation in Three Single Contracts/ works as a contractor or JV partner, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 1.78 Crore in each Contract in the similar nature work mentioned below. **Definition of Similar Nature Work:** "Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light **having RGBW and/or dot pixel light** of Government Building, Commercial building, Railway stations/Metros/RRTS, Airports, Sports stadium, Heritage Building/Ancient monument, Any other similar Façade lighting work of public use project."	Copies of relevant contracts/Work order along with Completion certificate duly issued by the client to be submitted along with bid the relevant financial year. In case of ongoing projects, CA certificate indicating project value, total invoiced amount, payment received against the relevant projects along with documentary proof should be submitted alongwith the bid as documentary evidence. **Note:** The year of work-order shall be determined solely based on the date of issuance of the Work Order/GeM Contract. For example, if a Work Order is issued in March 2020, the work shall be considered as pertaining to FY 2019-20, irrespective of its completion date, even if it is completed in FY 2021-22.

1.8	The bidder shall have maintenance experience of minimum 2 years of work executed by the Bidder required in clause 1.7 as above of similar nature of work having RGBW and/or dot pixel light in the last 7 years including current financial year of the work submitted the qualification under.	Copies of relevant contracts along with its experience/ Completion certificate duly issued by the client to be submitted along with bid the relevant financial year. Note: The year of work-order shall be determined solely based on the date of issuance of the Work Order/GeM Contract. For example, if a Work Order is issued in March 2020, the work shall be considered as pertaining to FY 2019-20, irrespective of its completion date, even if it is completed in FY 2021-22.
1.9	**Valid Electrical Contractor Licence** The Bidder shall possess a valid Electrical Contractor's Licence of the appropriate class in the State applicable for execution of the work and shall employ/deploy suitably qualified and competent supervisors and skilled workers as required for execution of the works in accordance with the requirements of the Electrical Inspector/competent authority and applicable statutory requirements.	Valid Electrical Contractor's Licence of the appropriate class, along with details/valid permits of qualified supervisors/skilled personnel, wherever applicable.
1.10	The bidder should not be blacklisted or debarred by any govt. organization or public sector organisation as on the date of submission of bid.	Self-declaration on non-Judicial stamp paper of Rs. 100/- as per **Annexure-H.**
1.11	The bidder must have a valid ISO 9001:2015, ISO:14001:2015, ISO 45001:2018 certificates of proposed OEM of Light Fixtures.	Copy of valid ISO certificates.
1.12	The Bidder shall submit an Authorization Letter from the OEM (Original Equipment Manufacturers means Manufacturer of Light Fixtures), duly signed by an authorized representative of the OEM, confirming its commitment to provide lighting design/simulation services, supply of materials, fulfil warranty obligations, and extend necessary technical, commissioning, and maintenance support to the Bidder throughout the execution and warranty period of the contract. Bidder shall submit valid and relevant test reports/certificates for the proposed light fixtures, issued by a laboratory accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL) for the relevant scope of testing. The laboratory may be an in-house facility	As per page no. 47 of client's tender.

	of the OEM or an independent third-party laboratory	
1.13	The person authorized to submit the bid must be Director of the company or Partner of the LLP Or Person Authorized to bid through Authorization letter issued by the competent authority of the bidder's firm.	Self-declaration on bidder's letterhead to be submitted along with bid.
1.14	**Compliance with Client's Eligibility / Declaration Requirements** The Bidder shall comply with all applicable eligibility, qualification, debarment, blacklisting, labour law and other statutory requirements stipulated in the Client's Tender Document, including all amendments/corrigenda issued by the Client from time to time. The Bidder shall submit all declarations, undertakings and supporting documents required under the Client's Tender Document, as applicable.	Relevant undertaking/declaration as prescribed in the Client's Tender Document and/or as required by BECIL.

2. PRELIMINARY EVALUATION

2.1. BECIL shall evaluate the proposals to determine that they are complete, technically complying, no computational errors have been made, required documents as mentioned in the EOI have been furnished, the documents have been properly signed and the response is generally in order. In case of any calculation error, the total (final) price shall be considered for evaluation.

2.2. BECIL may waive off any minor infirmity or non-conformity or irregularity in the proposal which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any bidder/OEM/Implementation Agency.

2.3. In case only one bid is received or during the Technical Evaluation only one bidder/OEM/Implementation Agency qualifies for the next stage of the bidding process, BECIL reserves the right to accept/reject the bid.

2.4. In case two bids are received from the bidder, both the bids will be rejected.

3. EVALUATION PROCESS

3.1. No enquiry shall be made by the bidder/OEM/Implementation Agency (s) during the course of evaluation of the EOI, after opening of bid, till final decision is conveyed to the successful bidder/OEM/Implementation Agency(s). However, the Evaluation Committee/its authorized representative and office of BECIL can make any enquiry/ seek clarification from the bidder/ OEM/ Implementation Agency(s), which the bidder/OEM/ Implementation Agency must furnish within the stipulated time else the bids of such defaulting bidder/OEM/Implementation Agency(s) will be rejected. The proposal will be evaluated on the basis of its content, not its length.

3.2. The bidder/OEM/Implementation Agency s' proposals will be evaluated as per the requirements specified in the EOI and adopting the evaluation criteria spelt out in subsequent paras of this EOI document. The bidder/OEM/Implementation Agency are required to submit all required documentation as per evaluation criteria specified in EOI.

3.3. Upon verification, evaluation/ assessment, if in case any information furnished by the bidder/OEM/Implementation Agency is found to be Incomplete/ incorrect, BECIL may seek clarification from the bidder. In case, the bidder fails to submit the relevant documents/details within the stipulated period of time, their bid will be summarily rejected and no correspondence on the same shall be entertained. Submission of false/forged documents will lead to forfeiture of security deposit/EMD and blacklisting of agency for a minimum period of 3 years from participating in BECIL tenders.

3.4. BECIL will review the proposal to determine whether the proposals are as per the requirements laid down. Proposals that are not in accordance with these requirements are liable to be disqualified at BECIL's discretion.

3.5. Evaluation of proposals shall be based on:

3.5.1. Information contained in the proposal, the documents submitted thereto and clarifications provided, if any.

3.5.2. Experience and Assessment of the capability of the bidder/ OEM/ Implementation Agency based on past record.

3.6. BECIL reserves the right to seek any clarifications on the already submitted bid documents; however, no fresh documents shall be accepted in support of proposals. BECIL also reserves the right to cross verify the information with any agency.

3.7. BECIL reserves the right to seek any clarifications on the already submitted bid documents; however, no fresh documents shall be accepted in support of proposals. BECIL also reserves the right to cross verify the information with any agency.

3.8. Conditional proposals shall NOT be accepted on any ground and shall be rejected straightway. If any. Clarification is required by the bidders, the same should be obtained before submission of the proposals.

3.9. Even though bidder/OEM/Implementation Agency satisfy the necessary requirements they are subject to disqualification if they have:

3.9.1. Made untrue or false representation in the form, statements required in the EOI document.

3.9.2. Records of poor performance such as abandoning work, not properly completing contract, financial failures or delayed completion.

3.10. The Financial Evaluation of the Bidders will be done only for those who qualify the Prequalification and technical evaluation Criteria and other mentioned criteria of the EoI.

4. FINANCIAL EVALUATION OF THE BIDS

The Bids will be financially evaluated as under:

Financial Bid Evaluation		
		Price and Margin Bid Format: **A** - Submit Lump sum Prices for supply and service items as per Schedule of Requirements (SoR) and Scope of Work (SoW) in INR (without Taxes) **B** - Quote margin to BECIL as a percentage of A [***Minimum - 5%***] **C** - Absolute value of Margin = **A*B** **D** - Overall Quoted price by bidder= **A-C**

- During evaluation, bidders with least "**D**" will be considered as **L1** and shall be declared the successful Bidder.
- The bid having higher value of "**B**" will be selected in case of two or more bidders have similar value of **D**.
- In case of a tie, the bidder who will be ready to offer higher value of "B" will selected. In case the stalemate/ tie persists, the bidder with higher marks in the Technical Evaluation will be selected. In case the stalemate still persists, Evaluation Committee of BECIL shall ask the bidders to conduct presentation on their proposed solution/undertaking of the project. Evaluation committee will then select the bidder on best presentation without giving any reasons/ justifications. The decision of Competent Committee of BECIL shall be final in this regard, and shall be abided by all bidders.
- If the bidder is selected, during the final tender submission, the price to be quoted to the Client shall not be more than price "**A**" and the margin offered to BECIL shall not be less than "**B**".
- The decision of BECIL shall be final in this regard and cannot be challenged in any manner and also be abided by all the bidders.
- **L1** bidder may be called for further negotiations, if required.
- A Pre-Bid agreement shall be signed by BECIL with the successful declared **L1** bidder as per Pre-Bid Agreement placed at **Annexure-J**.

SECTION –VI
ENCLOSURES AND ANNEXURES

Annexure- A

PRE CONTRACT INTEGRITY PACT

Between

Broadcast Engineering Consultants India Limited (BECIL) hereinafter referred to as **"Principal")**

And

…...... Hereinafter referred to as **"The Bidder/Contractors"**

Preamble:

The Principal intends to award, under laid down organizational procedures, contracts **for……** The Principal values full compliance with all relevant laws of the land, rule, regulations, economic use of resources and of fairness / transparency in its relations with its Bidder(S) and / Contractor(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

1.1. The Principal commits itself to take all measures necessary to prevent Corruption and to observe the following principles: -

a) No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for him/herself or third person, any material or Immaterial benefit which he/she is not legally be entitled to.

b) The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c) The Principal will exclude all known prejudiced persons from the process.

1.2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Office and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

2.1. The bidder(s) Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

a) The Bidder(s) Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract/ or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b) The Bidder(s) Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c) The Bidder(s) Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s) Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d) The Bidder(s) Contractor(s) of foreign origin shall disclose the name and address of the Agents/ representatives in India, if any. Similarly, the Bidder(s) Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" Shall be disclosed by the Bidder(s) / Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/ representative have to be in Indian Rupees only.

e) The Bidder(s) Contractor(s) will, when presenting himself, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract/Agreement.

2.2. The Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts

If the Bidder(s) Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s) Contractor(s) from the tender process or take action as per the defined procedure.

Section 4 – Compensation for Damages

4.1. If the Principal has disqualified the contractor from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages Equivalent to Earnest Money Deposit / Bid Security.

4.2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 – Previous transgression

5.1. The Bidder(s) contractor declares that no previous transgression occurred in the last 3 years with any other Company in any country conforming to the Anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2. If the contractor makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Banking of business dealings".

Section 6 – Equal treatment of all Bidders/Contractors/Subcontractors

6.1. The Bidder(s) Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact and to submit it to the Principal before contract signing.

6.2. The Principal will enter into agreement with identical conditions as this one with all Bidders, Contractors and Subcontractors.

6.3. The Principal will disqualify from the tender process all bidder who do not sign this Pact or violate its provisions.

Section 7 – Criminal charges against violating Bidder(s)/ Contractor(s)/Subcontractor(s)

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor, which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same Chief Vigilance Office.

Section 8 – External Independent Monitor/Monitors

8.1. The Principal may if required, appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

8.2. The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD of M/s Broadcast Engineering Consultants India Limited (BECIL).

8.3. The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/ Subcontractor(s) with confidentiality.

8.4. The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit nonbinding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

8.6. The Monitor will submit a written report to the Chairperson of the Board of the Principal within 8 to 10 weeks from the date of reference or intimation to him by the 'Principal' and, should the occasion arise, submit proposals for correcting problematic situations.

8.7. If the Monitor has reported to the CMD of the BECIL, a substantiated suspicion of an offence under relevant APC/PC Act, and the Chairman BECIL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Chief Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.8. The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 20 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by CMD, M/s. Broadcast Engineering Consultants India Limited.

Section 10 – Other provisions

10.1. This agreement is subject to Indian Law. Place of performance and jurisdiction is the head office of the Principal, i.e., New Delhi.

10.2. Changes and supplements as well as termination notices need to be made in writing. Side agreement have not been made.

10.3. If the Contractor is a partnership or a consortium, this agreement must be, signed by all partners or consortium members.

10.4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intensions.

FOR AND ON BEHALF OF CONTRACTOR **FOR AND ON BEHALF OF PRINCIPAL**

Annexure- B

(BANK MANDATE FORM)

Details for payment of tender processing fees

HDFC BANK

HDFC Bank Limited
Ansal s Fortune Arcade,
K Block, Sector 18,
Noida - 201 301.

Mandate Form

The Details for the facillitating the Payment are given below

A	Name of the Beneficiary	BROADCAST ENGINNEERING CONSULTANTS INDIA LIMITED
i	Address With Pin Code	BECIL Bhawan, C-56/A17, Sector -62, Noida – 201307 (U.P.)
ii	Permanent Account Number (PAN)	AAACB2575L
iii	(a) Telephone No. With STD Code	0120-4177850
	(b) Fax Number	0120-4177879
	(c) Contact Person	Sh. Awadhesh Pandit General Manager – (Finance)
	(d) E-Mail Address	gmfinance@becil.com
	(e) Mobile No.	9953119035
B	Bank Particulars	
i	Bank Name	HDFC Bank
ii	Bank Telephone No. with STD Code	0120-4664332
iii	Branch Address with PIN Code	Ansals Fortune Arcade K-Block, Sector-18, Noida-201301 Uttar Pradesh
iv	11 Character IFSC Code of the Bank (Either enclosed a Cancelled Cheque or obtain Bank Certificate as appended)	HDFC0000088
v	Bank Account Number as appearing on the Cheque Book	50200076192513
vi	MICR Code	110240014
vii	SWIFT Code	HDFCINBB
vii-	Bank Account Type	DOD Account

Certified that the particulars furnished above are correct as per our records.

Signature verified as par our record without any responsibility on our part
For HDFC BANK LIMITED
K-Block, Sector-18, Noida
Authorised Signatory
03/01/25

www.hdfcbank.com

Regd. Office: HDFC Bank Ltd., HDFC Bank House, Senapati Bapat Marg, Lower Parel (West), Mumbai - 400 013
Corporate Identity No.: L65920MH1994PLC080618

Annexure – C

Particulars of the Bidder

1.	Name of Company/Bidder	
2.	Office Address /Telephone No / Fax No / email id / website	
3.	Year of establishment	
4.	Status of the Company/bidder	
5.	Name of Directors	i) ii) iii)
6.	Names of principle person concerned with this work with title and Telephone No / Fax/ Email Id, Etc.	
7.	Whether registered with the registrar of companies /registrar of firms. If so, mention number and date.	i) ii) iii)
8.	In case of change of Name of the Firm, former Name / Names and year/ years of establishment:	
9.	GST registration certificate	
10.	Whether an assessed of income tax. If so, mention permanent account number.	
11.	State Annual turnover of the company/bidder Furnish copies of audited balance sheet and profit & loss Account (audited) for the last three years.	
12.	Particulars and place of similar type of works done in a single order. (Furnish details in a separate sheet and enclose copy of the employers certificate)	
13	Specify the maximum value of single work executed in the past three years.	
14.	Status and details of disputes/ litigation/ arbitration, if any.	
15.	Solvency Certificate issued by Scheduled commercial Bank	

Signature of Authorized Signatory

Place: _____
Date: _____
Address: _____
Mobile: _____
Email ID: _____

Annexure – D

Annual Turnover & Net worth

(To be printed on implementing agency's letterhead and signed by Authorized signatory.)

To,
Mr. Bipin B. Pandey
Deputy General Manager,
Broadcast Engineering Consultants India Limited
14-B, Ring Road, I.P.Estate, New Delhi-110002

Full Name of Bidder (Supplier) entity:

Full Address of Bidder (Supplier)

entity:

S. No.	Financial Year	Turnover of Bidder	Net worth	Remarks
1	2022-23			
2	2023-24			
3	2024-25			
	Average			

*Enclose Audited Balance sheets only.

Note: The required certificate from CA with UDIN No. is enclosed along with this form. Certificate without UDIN No. will be rejected.

Signature of Authorized

Signatory Place: _____
Date: _____
Address: _____
Mobile: _____
Email ID: _____

Annexure – E

Performa of letter of Undertaking for Bid Validity

To,
Mr. Bipin B. Pandey
Deputy General Manager,
Broadcast Engineering Consultants India Limited
14-B, Ring Road, I.P.Estate, New Delhi-110002

Reference: EOI No. <<>> dated << 202X>>

I/We hereby submit our Bid and undertake to keep our Bid valid for the period of 180 days from the date of submission of the Bid.

I/We also agree to abide by and fulfill all the terms, conditions of provision of the bid document.

Signature of Authorized Signatory

Place: _____
Date: _____
Address: _____
Mobile:_____
Email ID: _____

Annexure – F

Bid Covering Letter

To,
Mr. Bipin B. Pandey
Deputy General Manager,
Broadcast Engineering Consultants India Limited
14-B, Ring Road, I.P.Estate, New Delhi-110002

Reference: EOI No. <<>> dated << 202X>>

Dear Sir/Madam,

We, the undersigned, offer to provide Systems Implementation solutions to the Purchaser on <Name of the Systems Implementation engagement> with your Expression of Interest dated <insert date>and our Proposal. We are hereby submitting our Proposal, which includes our Technical bid sealed on the <URL of e-Procurement portal> portal.

We hereby declare that all the information and statements made in this Technical bid are true and accept that any misinterpretation contained in it may lead to our disqualification.

We undertake, if our Proposal is accepted, to initiate the Implementation services related to the assignment not later than the date indicated in Fact Sheet.

We agree to abide by all the terms and conditions of the EOI document. We would hold the terms of our bid valid for <180> days as stipulated in the EOI document.

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

Signature of Authorized Signatory

Place: _____
Date: _____
Address: _____
Mobile: _____
Email ID: _____

Annexure – G

Credentials Summary

S. No.	Project Name	Client Name	Client Type	Project Value (in INR)	Documentary evidence provided (Yes or No)	Project Status (Completed or Ongoing or Withheld)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Signature of Authorized Signatory

Place: _____
Date: _____
Address: _____
Mobile: _____
Email ID: _____

Annexure – H

Self-Declaration for Non Black Listing

[ON BIDDER'S LETTER HEAD]

Bidder Ref. No.
…… Dated:
……..

To,
Mr. Bipin B. Pandey
Deputy General Manager,
Broadcast Engineering Consultants India Limited
14-B, Ring Road, I.P.Estate, New Delhi-110002

We, M/s. ---------- hereby declare that the firm/company namely M/s. ----------, as on the date of bid submission, has not been blacklisted or debarred by any of the Central Government or State Government or any organization under Central/ State Government or any Statutory Authority, or any Public- Sector Undertaking.

M/s..... has not been found guilty of any criminal offence by any court of law in India or abroad.

M/s....., its directors and officers have not been convicted of any criminal offence related to their professional conduct or the making of false statement or misrepresentations as to their qualifications to enter into procurement contract within a period of three years preceding the commencement of the procurement process or have not been otherwise disqualified pursuant to debarment proceedings.

Yours faithfully

For,

Signature of Authorized Signatory

Place: _____
Date: _____
Address: _____
Mobile: _____
Email ID: _____

Annexure – I

Undertaking Regarding Payment of GST/ Filing Of GST Return

Ref……
……..
Date
……
….

To,

The Chairman and Managing Director,
Broadcast Engineering Consultants India Limited,
14-B, Ring Road, I.P.Estate, New Delhi-110002

Subject: Undertaking regarding Payment of GST/ Filing of GST Return

Dear Sir,

This is in connection to the works awarded by M/s Broadcast Engineering Consultants India Limited (BECIL), we hereby undertake that we will comply with Goods and Services Tax 2017 and subsequent amendment and Various Rules Relating to GST Act, 2017(herein after referred to as GST Act and Rules) wherever we are obliged to comply with the GST Act and GST Rules.

We further hereby undertake that we will issue proper **"Tax Invoice"** and/or any other Relevant Document as required under GST Act and Rules. We will furnish appropriate GST return and pay GST as required under GST Act and Rules on timely basis and will provide GST credit on timely basis through GST Portal (and/or by any other means as provided by GST Act and Rules).

We hereby certify & undertake that we will not alter, delete or modify the tax invoices and other details uploaded at GST Portal unless approved by BECIL in writing. We hereby certify all the relevant document along with tax invoice as the case may be

We also hereby certify & undertake that we indemnify BECIL on account of any loss of GST input credit as well as any interest, penalty, demands or other costs, expenses suffered by BECIL because of any failure on our part to file appropriate Return on time and/or pay Tax to Government/Appropriate Authority.

In case we do not make payment the tax/interest/penalty/other expenses etc. on demand raised by Government/Tax Authorities due to default/delay on our part/action, we also authorize BECIL to forfeit/deduct from security held by BECIL, equivalent amount of interest/penalty/tax etc. for the amount so withheld.

Signature of Authorized Signatory on behalf of

Agency Address: ____

Mobile: _____

Email ID: _____

Annexure – J

PRE BID AGREEMENT

This Pre-Bid Agreement is executed at Noida on this ___day of..... **, 2026** ("**Effective Date**").

Between

Broadcast Engineering Consultants India Limited, a Mini Ratna Public Sector Enterprise of the Government of India having its Registered Office at 56-A/17, Block-C, Sector-62, Noida -201307 (U.P.) and Head Office at 14-B IP Estate Ring Road, New Delhi- 110002 acting through Shri …… (hereinafter referred to as **"BECIL or First Party")** which expression shall unless repugnant to the context or meaning thereof, include its successors, authorized representatives and permitted assigns.

AND

M/s **XXX** registered under the Companies Act, 2013, with its registered office at..... acting through Shri ……. (hereinafter referred to as " **XXX** or Second Party") which expression shall unless repugnant to the context or meaning thereof, include its successors, authorized representatives and permitted assigns.

BECIL and **XXX** are individually referred to as "Party" and collectively as "Parties".

ARTICLE 1: PREAMBLE

WHEREAS BECIL represents that it is an ISO 9001:2015, 27001:2013, ISO/IEC 20000:2012 certified, Mini Ratna, Central Public Sector Enterprise (CPSE) of Government of India, which was established on 24th March 1995. BECIL provides Project Consultancy services, Turnkey solutions, System integration, Operation & Maintenance for the entire gamut of radio and television broadcast engineering. BECIL has also diversified into the domain of businesses pertaining to Strategic National Importance and has won major Projects/ Tenders in the field of Security & Surveillance, IT Networking & Data Centre and Communication Intelligence, Third Party Audit of Optical Fiber Networks.

WHEREAS M/s XXX is in the business of [The partner's profile to suitably inserted]

WHEREAS [*customer name*]_____ (Hereinafter referred as "CUSTOMER" or "END CUSTOMER") floated Tender Number: _____for _____[hereinafter referred as **RFP**]

WHEREAS BECIL published EOI No.__Dated _____(hereinafter referred as BECIL EOI) for selection of back-end partner/System Integrator/Implementation Agency to participate in the above RFP.

AND WHEREAS XXX has been selected as back-end partner through the BECIL's EOI process.

AND WHEREAS Parties have accepted to execute the contract if awarded by **[customer name]** _____and shall abide by all terms and conditions of such contract signed thereof.

AND WHEREAS BECIL & M/s XXX **have jointly accepted to collaborate to prepare and submit its competitive bid against the** Tender for Procurement of Model School floated by **Client** vide tender no. _____

AND WHEREAS, this Pre-bid agreement is executed solely for the purpose to bid for the tender issued by **[customer name]**_____ for Procurement of _____and may be superseded by an inter se agreement once the tender is awarded to BECIL.

AND WHEREAS the parties agreed to join its hand on following terms & conditions:

1.1 In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the agreement documents referred to.

1.2 The Parties wish to work together with the understanding that BECIL shall act as the bidder (sole bidder) and M/s **XXX** as back-end partners for participating in _____ **[INSERT PROJECT NAME].**

1.3 The following documents shall be deemed to form and be read and construed as part of this Agreement–

1.3.1 Tender for Engagement of Implementation Partner for Procurement of Model School vide **tender no.** _____

1.3.2 BECIL's **EOI No.** _____For _____**[INSERT PROJECT NAME]** for participation in tender for **[customer name]**

1.3.3 M/s **XXX** Private Limited bid received against the BECIL's EOI.

ARTICLE 2: GENERAL

2.1 PURPOSE:

BECIL, as the sole bidder, shall participate in the bidding process in primary tender of **Client**. The other party shall function as a back-end partner to support BECIL in fulfilling its obligations under the bid.

The back-end partner hereby undertakes not to participate individually, directly or indirectly, or as part of any other consortium/ arrangement for said tender, either independently or through any of its associates.

2.2 **Representation of the Parties:** M/s **XXX** represents to BECIL that as on date of signing this Agreement:

2.2.1 M/s **XXX** is duly organized, validly existing and in good standing under the laws of its incorporation and has all requisite power and authority to enter into this Agreement.

2.2.2 That the execution, delivery and performance by M/s **XXX** of this Agreement has been authorized by all necessary and appropriate corporate or governmental action, and will not, to the best of its knowledge:

(a) Require any consent or approval not already obtained;

(b) Violate any Applicable Law presently in effect and having applicability to it;

(c) Violate the Agreement and articles of association, by-laws or other applicable organizational documents thereof;

(d) Violate any clearance, permit, concession, grant, license or other governmental authorization, approval, judgment, order or decree or any mortgage contract, indenture or any other instrument to which M/s **XXX** is a party or by which M/s **XXX** or any of their properties or assets are bound or that is otherwise applicable to M/s **XXX.**

(e) Create or impose any license, mortgages, pledges, claims, security interests, charges or Encumbrances or obligations to create a lien, charge, pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of M/s **XXX** so as to prevent such Parties from fulfilling their obligations under this Agreement.

2.2.3 M/s **XXX** has not been black-listed by Central/ State Government or any other Government PSU and are not facing/ likely to face any disciplinary proceedings under Indian or under laws of any other country.

2.2.4 That this aforementioned TENDER is the legal and binding obligation of such Parties, enforceable in accordance with its terms against it;

2.2.5 That there is no litigation pending or, to the best of M/s **XXX** knowledge, threatened to which it or any of its affiliates is a party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfillment of its obligations under this Agreement.

2.2.6 That there is no legal action/dispute initiated or pending on M/s **XXX** at the time of signing of this Agreement which is likely to concern or affect BECIL in any manner. If any such case is found pending, the agreement will automatically become invalid and the agency will be penalized by withholding the EMD/ PBG and legal action will be initiated as deemed fit by the competent authority. All ongoing and future business association with BECIL will also be terminated.

ARTICLE 3: PROJECT BACKGROUND AND SCOPE OF WORK

3.1 Project Background

As per the project

3.2 Scope of Work

The detailed scope of work for System Integrator has been referred the **Client's Tender** document. For the detailed scope of work M/s **XXX** shall also refer to the primary tender document, its amendments in the form of corrigenda and subsequent contract signed between BECIL and **[customer name]** in the event of award of tender.

ARTICLE 4: ROLES AND RESPONSIBILITIES

4.1 BECIL and M/s **XXX** Limited hereby mutually agree that both of them shall remain as irrevocable members of this tie-up for the complete execution and completion of **Client** Tender/Work/Project (as per scope of aforementioned BECIL's EOI & **Client** tender).

4.2 DUTIES & OBLIGATIONS OF M/S XXX

4.2.1 M/s **XXX** will supply entire range of services for efficient completion of scope of works under the **Client** tender.

4.2.2 For the project to be undertaken, M/s **XXX** would formulate state-of-the-art, optimum and **General Standards of performance.** M/s **XXX** shall carry out the Services with due diligence and efficiency, and shall exercise such skill and care in the performance of the services as is consistent with recognized professional standards. M/s **XXX** shall act at all times so as to protect the interests of BECIL.

4.2.3 M/s **XXX** have read and understood the terms and conditions of the **Client** tender and it agree to support BECIL in abiding by those terms and conditions.

4.2.4 M/s **XXX** confirms that they understood on-ground technical complication and they agree to have taken into consideration the manpower required on the basis of the scope of work.

4.2.5 M/s **XXX** has understood the requirement in terms of ROW, Terrain and other clearances required to execute the project. They agree to manage these requirements at their own cost without any liability on BECIL in this regard.

4.2.6 M/s **XXX** have agreed to accept all the challenges with regard to Time Overrun, Cost Overrun, payment terms & Liquidated Damages & Penalties and confirm, to abide by the timeline in-case the project is awarded.

4.2.7 M/s **XXX** has agreed to accommodate the change in scope of work by **Client** whether or not incidental and ancillary, to achieve the objective as per the **Client** tender requirement, without any additional cost to BECIL.

4.2.8 M/s **XXX** agreed to abide by all the terms on back to back basis as per the System Integrator duties and Obligations as specified in the **Client** tender.

4.2.9 M/s **XXX** shall be responsible for the detailed Scope of Work at Clause 3.2 of this agreement.

4.2.10 Since payment conditions are on back to back basis and time is the essence of the project; M/s **XXX** should maintain sufficient liquidity/funds for timely and smooth execution of the project.

4.3 DUTIES AND OBLIGATIONS OF BECIL

4.3.1 BECIL shall act as coordinator/ Project Management Consultant. Providing timely feedbacks and correspondences with the **Client** on the various stages of project deliverables.

4.3.2 To ensure the technical, commercial and administrative coordination of the project.

4.3.3 To lead the contract negotiations of the project with the **Client** authority.

4.3.4 In the event of project getting awarded, BECIL shall act as the only channel of communication between the **Client** authority and M/s **XXX** to execute the project/ Agreement.

4.4. RESPONSIBILITY MATRIX

In addition to the aforementioned duties and obligations of the parties, the Agreement will cover the following scope to be undertaken by Parties as mentioned in the Responsibility Matrix given below.

P-Primary Responsibility
S-Secondary
Responsibility J- Joint
Responsibility
N- No Responsibility

S.NO.	Description	BECIL	XXX
	PRE-BID RESPONSIBILITY		
1.	Pre-bidding site survey, if any	**S**	**P**
2.	Fully complied technical bid response preparation as per tender Terms & Conditions.	**J**	**J**
3.	Competitive commercial bid preparation as per tender	**J**	**J**
4.	Documentation and correspondence with the customer.	**P**	**N**
5.	Provisioning of EMD/ Bid Security as per tender Requirement.	**P**	**N**
6.	Provision of Back to Back EMD except by MSE/Start Ups as per GoI guidelines.	**N**	**P**
7.	Provisioning of any other required document for bidding.	**J**	**J**
8.	Submission of complete techno-commercial offer to the Customer in requisite mode.	**J**	**J**
9.	Any Presentation if required during the tender evaluation.	**S**	**P**
10.	Any other relevant follow up, correspondence and meetings With customer.	**P**	**S**
	POST-BID RESPONSIBILITY (In the event of winning the contract)		
1.	Signing of contract with the **Client**	**P**	**N**
2.	Submission of PBG to **Client**	**P**	**N**
3.	Submission of back to back PBG to BECIL	**N**	**P**
4.	Any relevant follow up, correspondence and meeting with the customer	**P**	**S**
5.	Executing the entire Scope of Work to the satisfaction of the **Client**	**S**	**P**
6.	Providing project finance/working capital for timely execution of the project.	**N**	**P**

4.5 **C O V E N A N T S :** The Parties hereby undertake that in the event the BECIL is declared the selected Bidder and awarded the project, BECIL shall enter into an Agreement with **Client** for performing all the obligations as **System Integrator**.

ARTICLE 5: COOPERATION OF THE TRANSACTION

5.1 The parties agree to abide by the broad Responsibility Matrix mentioned above and forms an integral part of this Agreement including all the tender terms such as General Requirements, Technical Parameters, Commercial Aspects, Evaluation and Acceptance criteria of the tender, Guarantee/ Warranty terms etc.

5.2 Expenses towards preparation of proposal, submission of bid and other allied activities for submission of bid will be undertaken by the respective parties at their own cost.

5.3 The cooperation for execution of the Project between the parties hereto shall be exclusive, i.e., neither of them shall without the other party's consent - alone or together with another PARTY take part in any agreement or proposal with regard to this tender.

ARTICLE 6: PERIOD OF AGREEMENT

6.1 The term of this agreement shall be for 180 Days from the date of signing of this agreement ("Effective Date") or till the completion of the project & release of all payments thereof whichever is later. All obligations hereunder shall only apply during the Term of this agreement and to such obligations and commitments in relation to the Tender/Work/Project under the scope of BECIL's EOI & **Client** tender, as may have been undertaken by the Parties during the Term with validity exceeding the Term. The Term of this agreement can be extended by mutual agreement between the Parties, depending upon the requirement.

NB- Completion shall mean certificate of Completion issued by BECIL.

ARTICLE 7: PAYMENT AND COMMERCIAL

7.1 BECIL will Provision the EMD to **Client** as per the Primary tender requirement.

7.2 M/s **XXX** will provision for Back to Back EMD of equal amount to BECIL, except in case the M/s **XXX** is MSME/Start Ups and are exempted from paying EMD as per GOI guidelines.

7.3 BECIL shall furnish Performance Security in the form of PBG as per the terms and conditions of primary tender.

7.4 M/s **XXX** will furnish back to back performance Security in the form of PBGs to BECIL as per the terms & conditions of the primary tender. The PBG shall remain valid up to **60 days** beyond the date of expiry/date of claim of the PBG submitted by BECIL to **Client**.

7.5 M/s **XXX** will raise its invoices to BECIL based on milestone completion. BECIL will then raise the invoices to **Client** (as per relevant clause of primary tender) after getting the relevant documentary proofs of successful completion of the said milestones from M/s **XXX** the service provider invoices duly certified by BECIL Project Manager/Client.

7.6 BECIL shall be entitled to keep ____% of the project value (of bid value including taxes submitted by BECIL to **Client**) as its project management consultancy.

7.7 Upon receipt of corresponding payment from the **Client**, BECIL shall disburse the payment to M/s **XXX** within 15 days of receipt of the payment from **Client** after deduction of BECIL project management consultancy as per clause 7.6 and expenses as per clause 7.9 and BG making charges, if any.

7.8 All Invoices received from M/s **XXX** would be inclusive of all statutory taxes/ GST. BECIL will consider invoices raised by M/s **XXX** to submission of all relevant documents and in case the documents are not proper, BECIL is liable to reject the invoices.

7.9 In case BECIL is required to open the offices, the office rent (including the maintenance & electricity charges as applicable) shall be recovered by BECIL from M/s **XXX**. Also, the Salaries paid to the manpower deployed on the payroll of BECIL, specifically employed for this project shall be recovered from M/s **XXX**.

7.10 Notwithstanding anything contained in any other agreement, document, correspondence, arrangement between the parties in respect of **Client** Tender/ Works / Projects, M/s **XXX** understands, agrees and undertakes that:

7.10.1 M/s **XXX** participated in BECIL's EOI and that all terms & conditions of the BECIL's EOI shall apply to M/s **XXX**.

7.10.2 The payments terms between BECIL & M/s **XXX** are on back-to-back basis and the payment shall be released by BECIL only if and when received by BECIL from **Client** and subject to terms & conditions of agreement and submission of complete required documents.

7.10.3 M/s **XXX** will not demand or make any claim under any law with respect to the pending payment till the time corresponding payment is received by BECIL from **Client**. BECIL shall not be responsible in any manner whatsoever for any delay in releasing the payments or withholding of payments by **Client**.

7.10.4 The (day) date of delivery of goods and/or rendering of services by M/s **XXX** shall be the date or realization of payment from the **Client** once the goods and/or services are accepted by **Client**.

7.10.5 The stage wise invoices raised by M/s **XXX** maybe accepted by BECIL, however, the date of completion of the milestone / delivery of goods or services shall only be recognized for invoice and its payment when the respective acceptance of goods or services and payment thereof is received from **Client**.

7.10.6 If in the instant contract, M/s **XXX** is acting only as trader / reseller / distributor/ authorized agents and/ or is engaged in a WORKS contract, no benefits under MSME Act 2006 and PPP Policy 2012 as per MSE Guidelines issued by Ministry of MSME would be applicable to it on account of acceptance of back to back payment terms as above. By agreeing to the terms of **Client** Tender, the M/s **XXX** agrees to forgo its rights under this Act and Policy.

7.10.7 M/s **XXX** hereby agrees to ensure timely GST compliances as per the statutory requirements. All the costs pertaining to any GST non-compliance including but not limited to any loss of eligible input tax credit due to non-payment/non-filing of GST return and applicable interest/penalties shall be borne/indemnified by M/s **XXX**. Further M/s **XXX** hereby agrees that BECIL reserves the

right for reimbursement of any such cost incurred out of the aforesaid noncompliance(s). M/s **XXX** will provide proof of payment of GST i.e. GSTR-1, GSTR-3B, etc. for taking GST payment from BECIL against invoices.

7.11 Any sum of money due and payable to M/s **XXX**, under this contract for **Client** tender entered between the parties herein whether continuing or completed may be appropriated by BECIL and set off against any claim of BECIL of any nature whatsoever, arising under this contract or any other contract entered into between the parties, herein whether continuing or complete.

7.12 There is also expenses towards Office establishments/ Purchase of fixed assets (with mutual consent) in the project. All such expenditure must be treated as direct expenditure and will be borne by directly M/s **XXX**.

7.13 Payments shall be released to M/s **XXX** only on satisfactory acceptance of the deliverables by **Client** for each task and release of payment by **Client** as per the schedule given at clause 22 of Primary tender of **Client** and Corrigendum issued thereof.

ARTICLE 8: GENERAL TERMS & CONDITIONS

8.1 AGENCY

This Agreement between the parties is on a principal to principal basis and it is agreed that M/s **XXX** is not and shall not represent itself as an agent of BECIL.

8.2 CONFIDENTIALITY AND NON-DISCLOSURE

8.2.1 The M/s **XXX** recognizes, accepts and agrees that disclosure of Confidential information to the Staff shall be only on a need-to-know basis and only those staff who are involved in rendering the services and need to have access would alone be informed of Confidential information.

8.2.2 The M/s **XXX** recognizes, accepts and agrees that all tangible and intangible information obtained or disclosed to the Bidder's and/or its staff, including all details, documents, data, business/ customer information and the BECIL 's practices and trade secrets (all of which are hereinafter collectively referred to as "confidential information") which may be communicated to the M/s **XXX** and/or its facility staff may be privy under or pursuant to this Contract and/or in the course of performance of the M/s **XXX** obligations under this Contract shall be treated, as absolutely confidential and the M/s **XXX** irrevocably agrees and undertakes and ensures that all its facility staff shall keep the same as secret and confidential and shall not disclose the same at all in whole or part to any Person or persons (including legal entities) an any time or use nor shall allow information to be used for any purpose other than that as may be necessary for the due performance of the M/s **XXX** obligations hereunder except when required to disclose under the due process and authority of law.

8.3 INTELLECTUAL PROPERTY RIGHTS

8.3.1 Deliverable, outputs, plans, drawings, specifications, designs, reports and other documents and software submitted by the Bidders under this EOI and subsequent to this EOI in relation with this tender shall become and remain the property of BECIL/procuring entity and subject to laws of copyright, must not be shared with third parties or reproduced, whether in whole or part, without BECIL's/ the procuring entity's prior written consent.

8.3.2 The M/s **XXX** shall, not later than upon termination or expiration of this Contract and/or subsequent Agreement/Contract signed with the M/s **XXX**, deliver all such documents and software to BECIL/the procuring entity, together with a detailed inventory thereof.

8.3.3 M/s **XXX** shall not incorporate any materials, technology or any item or thing that involves the use of intellectual property rights or proprietary rights that the M/s **XXX** does not have the right to use or that may result in claims or suits against BECIL arising out of claims of infringement of any intellectual property rights or other proprietary rights.

8.3.4 The M/s **XXX** shall perform all acts necessary to obtain and continue to have all necessary licenses, approvals, consents of third parties free from any encumbrances and all necessary technology, hardware and software to enable it to perform its obligations under this Contract. If license agreements are necessary or appropriate between the M/s **XXX** and third parties for purposes of enabling, enforcing or implementing the provisions hereinabove, the Bidder shall be under an obligation to enter into such agreements at its own sole cost, expense and risk.

8.4 RISK & COST CLAUSE

8.4.1 In case of persistent breach/default of the terms and conditions of the Contract and due to abnormal delay (beyond the maximum late delivery in the Liquidated damages clause) in supplies, defective supplies or non-fulfilment of any of the terms and conditions of the RFP and the Work Order, BECIL may cancel the contract/Work Order in full or part thereof, and will procure supplies/equipment's or ensure the execution of work or any pending service in case of service contract from other willing vendor at the risk and cost of the Bidder/Agency. Risk & Cost Clause, in line with Conditions of Contract may be invoked in any of the following cases:

8.4.2 Agency/ Bidder's poor progress of the work vis-à-vis execution timeline as stipulated in the Contract, backlog attributable to Agency including unexecuted portion of work/ supply does not appear to be executable within balance available period.

8.4.3 Withdrawal from or abandonment of the work by Agency/Bidder before completion of the work as per contract.

8.4.4 Non completion of work/ Non-supply by the Agency/ Bidder within scheduled completion/delivery period as per RFP or as extended from time to time, for the reason attributable to the Agency/ Bidder.

8.4.5 Termination of Contract on account of any other reason (s) attributable to Agency/ Bidder.

8.4.6 Assignment, transfer, subletting of Contract by the Agency/Bidder without BECIL's written permission resulting in termination of Contract or part thereof by BECIL.

8.5 Extension of time

8.5.1 It is hereby agreed that BECIL shall by mutual agreement update and extend the timeline/ milestone for the completion of work after discussion with the Client and its officials.

8.5.2 Any period within which M/s **XXX** is unable to complete the work or perform its obligations due to persistence of force majeure event, shall be extended for a period equal to the time during which the M/s **XXX** was unable to perform such action.

8.5.3 Any extension of time agreed upon mutually shall be documented in writing and signed by both the parties to be affected.

8.6 LIQUIDATED DAMAGES

8.6.1 If the M/s **XXX** fails to achieve the completion of the work in accordance with the scheduled completion date as given in the RFP or the subsequent Work Order issued thereto, BECIL may without prejudice to any other right or remedy available to it as under the Contract or Law:

8.6.2 Any liquidated damages imposed on BECIL by the Client, BECIL shall pass on the entire quantum of liquidated damages to the bidder/ selected agency on back-to-back basis.

8.6.3 The amount towards Liquidated Damages shall become leviable from the scheduled completion date or from the expiry of the extension, if any, given by BECIL without the levy of Liquidated damages.

8.6.4 BECIL may without prejudice to its right to effect recovery by any other method, deduct the amount of Liquidated Damages from any money belonging to the Bidder which has become due or payable (which shall also include BECIL 's right to claim such amount against Bidder's Bank Guarantee)

8.6.5 Any such recovery of Liquidated Damages shall not in any way relieve the Bidder from any of its obligations to complete the works or from any other of its other obligation and liabilities under the Contract.

8.7 Undue Influence

8.7.1 The M/s **XXX** undertakes that it has not given, offered or promised to give, directly or indirectly, any gift, consideration, reward, commission, fees, brokerage or inducement to any person in service of the BECIL or otherwise in procuring the Contracts or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of the present Contract or any other Contract with the Government of India for showing or forbearing to show favor or disfavor to any person in relation to the present Contract or any other Contract with the Government of India.

8.7.2 Any breach of the aforesaid undertaking by the M/s **XXX** or any one employed by it or acting on its behalf (whether with or without the knowledge of the Agency) or the commission of any offers by the Agency or anyone employed by him or acting on his behalf, as defined in the Bharatiya Nyaya Sanhita, erstwhile known as the Indian Penal Code, 1860 or the Prevention of Corruption Act, 1986 or any other Act enacted for the prevention of corruption shall entitle BECIL to cancel the contract and all or any other contracts with the M/s **XXX** and recover from the M/s **XXX** the amount of any loss arising from such cancellation.

8.8 Unethical Practice

8.8.1 If the M/s **XXX** has engaged in corrupt, fraudulent, collusive and coercive practices or defaulted commitments under integrity.

8.8.2 Any intentional omission or misrepresentation in the documents submitted by the M/s **XXX** for the purpose of due diligence or for the execution of any act essential for the execution of the Project.

8.8.3 If the M/s **XXX** uses intimidation / threats or bring undue outside pressure on BECIL or any of its official for acceptance / performances of the deliverable/qualified work under the contract:

8.9 **Penalty for Unethical Practice and Undue Influence**

8.9.1 Forfeiture of Bank guarantee or any other bond or bid security submitted by the M/s **XXX**.

8.9.2 Cancellation/ termination of the Contract with the liberty to recover the accrued losses/damages from the pending bills raised by the Bidder against the delivery of material and execution of work.

8.9.3 Initiation of arbitration /legal proceedings to recover losses or damages incurred by BECIL due to the violation of ethical practice or use of undue influence by the M/s **XXX**.

8.10 **PENALTIES**

8.10.1 In the event of any penalties, deductions, disincentives, or charges levied by the **Client** due to poor or substandard quality of work, non-compliance with service standards, or any deficiencies related to the assigned scope of work, the same will be recovered from the bills submitted by the System Integrator.

8.10.2 The System Integrator shall bear the full financial responsibility for such penalties or deductions imposed on BECIL by **Client** and will not be entitled to claim any reimbursement or adjustment for the same.

8.11 **TERMINATION**

8.11.1 **Termination of Contract by BECIL due to unsatisfactory performance**

(i) If the M/s **XXX** refuses or fails to execute the specified quantum of work or any separate part thereof with diligence or ensure its completion within the time specified in the RFP, or subsequent work order issued thereto, then it shall be open to BECIL at its option by written notice to the M/s **XXX** to-:

(ii) To terminate the contract without prejudice to any other remedy available under the Contract. That a notice of cure, highlighting the deficiency or problem shall be served on the M/s **XXX** by BECIL, with an opportunity to cure the same within a window period of 15 days. That on the non-resolution of deficiency, a notice of termination shall be served on the M/s **XXX** and the Contract shall be deemed terminated after a period of 15 days from the date of notice of termination.

(iii) That the contract shall stand terminated and shall cease to be in force and in effect after a fifteen day period from the date of the notice of termination. The M/s **XXX** in consequence of the above, shall stop forthwith any of its work then in progress, except such work as BECIL may, in writing, require to be executed at the designated site/premises.

(iv) That the whole or part of the performance security furnished by the M/s **XXX** is liable to be forfeited without prejudice to the right of BECIL to recover from the M/s **XXX** any accruing or incurred losses or damages, on account of termination of contract due to unsatisfactory performance/ delay in execution of work.

8.11.2 **Termination due to breach**

(i) BECIL may, without prejudice to any other remedy available for the breach of contract, may terminate the contract in sub-sequence to non –resolution of deficiency after the service of a notice of cure with a window period of fifteen days. After the end of the cure period, a 15 (fifteen) days' notice shall be served on the M/s **XXX** and the contracts shall be deemed terminated after the end of the period of fifteen days from the date of notice of termination.

(ii) The following sub-clauses shall attract the provision of termination, in the event if-:

a. If the M/s **XXX** has abandoned or repudiated the Contract;

b. If the M/s **XXX** has without valid reason failed to commence work on the project promptly;

c. If the **XXX** has persistently failed to execute the works/express deliverable in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause;

d. If the M/s **XXX** defaults in proceeding with the works/job with due diligence and continues to do so after a notice in writing of fifteen (15) days from BECIL;

e. If the M/s **XXX** has obtained the contract as a result of undue influence or has adopted unethical means/corrupt practices.

f. if the information submitted/furnished by the M/s **XXX** is found to be incorrect;

(iii) That any pending bills/ invoices raised by the M/s **XXX**, prior to or post the termination of the contract on account of its breach of terms and conditions shall be put on hold for a period of six weeks, and any amount deducted by the **Client** against the bills raised by BECIL shall be consequently deducted from the bills raised by the M/s **XXX**, respectively.

8.11.3 **Termination due to Insolvency**

(i) If the M/s **XXX** dissolves or become bankrupt or insolvent or cause or suffer any receiver to be appointed for its business of any assets thereof compound with his Creditors, or being a corporation commence to be wound up, not being a member's voluntary winding up for the purpose of amalgamation or reconstruction, or carry on its business under a Receiver for the benefits of its Creditors any of them, then BECIL shall be at liberty :-

(ii) To terminate the contract forthwith upon coming to know of the happening of any such event as aforesaid by a fifteen day notice in writing to the M/s **XXX** or to give the Receiver or liquidator or other person, the option of carrying out the contract subject to its providing a guarantee up to an amount to be agreed upon by BECIL for due and faithful performance of the contract.

8.11.4 **Termination for Convenience**

BECIL can terminate the Agreement by serving a 30 days notice without assigning any cause or reason on the part of M/s **XXX**. The contract shall be deemed terminated after a period of 30 days from the date of termination notice.

8.12 **Post Termination Responsibility:**

8.12.1 In all cases of termination herein set forth, the obligations of BECIL to pay shall be limited to the period up to the date of termination, subject to the receipt of such payment from the Client.

8.12.2 That any pending bills raised by the M/s **XXX**, prior to or post the termination of the Contract on account of the breach of the terms and conditions of the contract, shall be put on hold, till the time, the corresponding payment is received from the **Client** and any amount deducted by the **Client** against the bills raised by BECIL shall be consequently deducted from the bills raised by the Bidder respectively.

8.12.3 The M/s **XXX**, shall forthwith stop any of its work then in progress, except such work as BECIL may, in writing, require to be executed at the designated site/premises.

8.12.4 That in the event of termination under clause 8.12.1 and 8.12.2 the whole or part of the performance security furnished by the M/s **XXX** is liable to be forfeited without prejudice to the right of BECIL to recover from the M/s **XXX** any accruing or incurred losses or damages, on account of termination of contract due to unsatisfactory performance/ delay in execution of work

8.13 **TAXES**

8.13.1 M/s **XXX** shall bear all taxes and duties etc. levied or imposed on them under the Agreement including but not limited to, Customs duty, Excise duty, GST, any other taxes and all Income Tax levied under Indian Income Tax Act – 1961 or any amendment thereof during the entire Agreement period.

8.13.2 Should M/s **XXX** fail to submit returns/ pay taxes in times as stipulated under applicable Indian/ State Tax Laws and consequently any interest or penalty is imposed by the concerned authority, M/s **XXX** shall pay the same. M/s **XXX** shall indemnify BECIL against any and all liabilities or claims arising out of this Agreement for **Client** tender for such taxes including interest and penalty by any such Tax Authority may assess or levy against the BECIL.

8.14 **Indemnity**

8.14.1 The Bidder shall indemnify, save, hold harmless and defend BECIL and its officers, servants, employees and agents promptly upon demand and at its expense, from and against any and all suits, proceedings, actions, demands, losses, claims, damages, liabilities, costs (including reasonable attorney's fees and disbursements) and expenses (collectively, "Losses") to which BECIL may become subject, insofar as such losses arise out of, in any way relate to, arise or result from:

a) Any Compensation/ claim or proceeding by any third party against BECIL arising out of any act, deed or omission by the M/s **XXX**;

b) Any breach by the M/s **XXX** of any of its obligations under this Contract or from any negligence under the Contract, including any errors or deficiencies in the performance its scope of work.

8.14.2 That BECIL shall have no liability whatsoever for any injury/death to the staff M/s **XXX** caused or suffered during the performance of its obligations hereunder

8.15 ASSIGNMENT AND SUB-CONTRACTING

8.15.1 Neither this agreement nor any of the rights and obligations under it can be assigned by any party. Parties may engage sub-contractors by mutual consent.

8.15.2 M/s **XXX** shall not participate directly or indirectly whether in consortium or separately in **Client** Tender and shall not quote rates to any other party participating/pre-qualified for the current **Client** Tender directly or indirectly through its subsidiary, partnership, ownership, individual firm etc.

8.16 FORCE MAJEURE

8.16.1 For the purpose of this Contract, the term "Force Majeure" shall mean an event which is beyond the reasonable control of a Party, is not foreseeable, is unavoidable and not brought about by or at the instance of the Party claiming to be affected by such events and which has caused the non-performance or delay in performance ,and which makes a Party's performance of its obligations hereunder impossible or impractical as reasonable to be considered impossible in the circumstance, inclusive of but not limited to war, riots, civil disorder, earthquake, fire, strikes, lockouts or other industrial action (except where such strikes lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or nay other action by the Government Agencies.

8.16.2 Force Majeure shall not include (i) any event which is the caused by the negligence or intentional action of a Party or by of such Party's agents or employees, nor (ii) any event which a diligent party could reasonably have been expected both to take into account at the time of the acceptance of the work order under this RFP, and avoid or overcome with persistent effort in carrying out its respective obligations.

8.16.3 In the case of failure to perform this Agreement due to any force majeure, both party shall be liable for such failure, and this Agreement shall be terminated automatically, if the persistence of such force majeure event continues for more than three months. In the case of failure to perform any part of this Agreement due to any force majeure, the party suffering from such force majeure may be exempted from corresponding liability to the extent of the impact of such force majeure. However, such party shall continue to perform other obligations under this Agreement which have not been affected by such force majeure.

8.17 GOVERNING LAW AND JURISDICTION

8.17.1 This agreement is governed by the laws of India and each Party irrevocably and unconditionally submits to the exclusive jurisdiction of the Courts at New Delhi, India.

8.17.2 Where the M/s **XXX** has not agreed to dispute resolution, the dispute/ claims arising out of the tender and this agreement shall be subject to the jurisdiction of the competent courts at New Delhi, India.

8.18 ARBITRATION CLAUSE

8.18.1 Conciliation of Dispute

(i) Any dispute(s) /difference(s)/issue(s) of any kind whatsoever between/amongst the Parties arising under/out of/in connection with this contract shall be settled mutually and amicably between the Parties, within a time span of thirty days from the date of invocation of dispute vide a written notice by the aggrieved party. The Aggrieved Party shall notify the other party in writing about such dispute(s)/difference(s)/issue(s) between/amongst the Parties and that such a Party wishes to refer the dispute(s)/ difference(s)/issue(s) to Conciliation. Such Notice/Invitation for Conciliation shall contain sufficient information as to the dispute(s)/ difference(s)/issue(s) to enable the other Party to be fully informed as to the nature of the dispute(s)/ difference(s)/issue(s), as well as the amount of monetary claim.

(ii) That in the event of reference of dispute for Conciliation, a committee comprising of two members, nominated by each party i.e. the M/s **XXX** and BECIL respectively shall try to amicably resolve/settle the dispute.

8.18.2 Reference of Dispute to Arbitration

(i) In the event of failure in mutual resolution of the issue, any dispute(s)/ controversy(s)/ issue(s) arising out of or in connection with the contract, including any question regarding its existence or validity shall be referred to and finally resolved by Arbitration administered by the Delhi International Arbitration Centre as per the Delhi International Arbitration Centre proceeding Rules 2023.

(ii) The Aggrieved party wishing to refer a dispute to Arbitration shall give a notice to the Defaulting Party specifying all the points of dispute(s) with details of corresponding the claim amount.

(iii) The Arbitration Proceeding shall commence within a span of thirty days from the date of receipt of Invocation Notice complete in all respects as mentioned above,

(iv) The dispute(s)/ difference(s)/controversy(s) shall be adjudicated by a single/sole Arbitrator empanelled with the Delhi International Arbitration Centre.

(v) The seat of Arbitrations shall be at New Delhi and the Arbitration proceeding shall be conducted in English.

(vi) The award of Sole Arbitrator shall be final and binding on the parties and unless directed/awarded otherwise by the Sole Arbitrator, the cost of arbitration proceedings shall be shared equally by both the parties.

(vii) The provision of the Arbitration and Conciliation Act, 1996 as amended and applicable from time to time shall apply to the Arbitration proceedings under this Contract.

(viii) That any claim of damage(s) or loses (s) incurred by BECIL as a consequence of the invocation of the litigation/arbitration proceeding owing to the suspension or abandonment of work by the M/s **XXX** shall be reimbursed by M/s **XXX**.

8.18.3 In the event of initiation of AMRCD proceedings between BECIL and the client, the decision / mutual settlement arrived at, on the conclusion of the proceeding between the parties, shall in turn become applicable on M/s **XXX**.

8.19 RIGHT TO INSPECTION

8.19.1 That BECIL and its field officers or its Auditors, shall have the right to carry out inspection checks and tests, and do audit of the Bidder's premises, personnel and records relating to the project in order to ensure there is no compromise on the quality of goods/services provided by the Bidder to the BECIL and its Client. The BECIL has a right to review and monitor the security practices and control procedures adopted by the Bidder. The Bidder shall produce and make available all such books, records, information, etc. 'related to project work for the purpose of Inspection/ audit as sand when required.

8.19.2 That BECIL shall have the right to review and monitor the performance of the Bidders on a continuous basis system integrator shall furnish necessary particulars, statements, etc., as desired by the BECIL in a periodical manner for the purpose of assessment of their performance.

8.20 NOTICES

8.20.1 Any notice, invoice, approval, advice, report or notification in connection with this Contract shall be in writing and any notice or other written communication pursuant hereto shall be signed by the party issuing the same and shall be addressed to the BECIL or the System Integrator and may be given by delivering the same by hand or sending the same-by prepaid registered mail, official e-mail or facsimile to the relevant address forth below or such other address as each Party may notify in writing to the ether Party from time to time. Any such notice given as aforesaid shall be deemed to be served or received at the time upon delivery (if delivered by hand) or upon actual receipt (if given official e-mail or facsimile) or Fifteen (15) Clear days after posting (if sent by post).

(a) Any notice or other document which may be given by either Party under the Contract/ Agreement shall be given in writing in person or by pre-paid recorded delivery post, email.

(b) In relation to a notice given under the Contract/ Agreement, any such notice or other document shall be addressed to the other Party's principal or registered office address as set out below:

Name: …….. **Designation: ……** **Address:** Broadcast Engineering Consultants India Limited, 14-B, Ring Road, I.P.Estate, New Delhi-110002 **Email:**	**Name ..... ,** **Designation:** …….. **Address:** …….. …… **…….** **Email**:

8.20.2 In relation to a notice given under the Contract/ Agreement, a Party shall specify the Parties address for service of notices, any such notice to be copied to the Parties at the addresses set out in this tender.

8.20.3 Any such notice or other document shall be deemed to have been given to the other Party (or, if relevant, its relevant associated company) if delivered between the business hours of 9.00 am and 5.30 pm at the address of the other Party set forth above, or on the next working day thereafter if delivered outside such hours, and 7 days from the date of posting (if by letter).

8.20.4 Either Party to the Contract may change its address, telephone number, and nominated contact for notification purposes by giving the other Party reasonable prior written notice of the new information and its effective date.

8.21 **No Waiver**

No failure on the part of the either party hereto to exercise, and no delay on its part in exercising, any right or remedy under this Contract will operate as a waiver thereof nor will any single or partial exercise of any right or remedy preclude any other or further exercise thereof or the exercise of any other right or remedy and the same shall not affect in any manner the effectiveness of any of the provisions of this Contract.

8.22 **SURVIVAL**

8.22.1 The Rights and obligations under this Agreement that by their nature should survive and will remain in effect after termination or expiration of this Agreement.

8.22.2 Each indemnity and guarantee arising in respect of this agreement survives the performance of obligations arising out of or under this agreement and the termination of this agreement and will continue in force as long as necessary to affect their purpose.

8.23 **AMENDMENT**

Unless otherwise stated expressly, this Contract shall be modified only by an instrument in writing duly executed by both the parties.

8.24 **SEVERABILITY**

If any provision of this agreement is held invalid by any law or regulation of any government or by any court or arbitrator, that invalidity will not affect the enforceability of any other provision.

8.25 **DAMAGES**

Once the Bid has been submitted for primary tender of **Client**, M/s **XXX** cannot withdraw from the Agreement. Any damage/ loss caused to BECIL due to failure on the part of the M/s **XXX** to enter into a detailed agreement with **Client** shall be borne by the M/s **XXX** and will be made good by the M/s **XXX** in case BECIL has to make payment of any damages/penalty to **Client**.

8.26 **LIMITATION OF LIABILITY**:

With the exception of any breach of confidentiality obligations, neither party will be liable to the other party for any costs, damages, expenditure, loss of profits, prospective profits of any kind or nature etc. arising from the termination or alleged breach of this agreement or in any manner arising from this agreement.

8.27 By signing this Agreement, BECIL, and M/s **XXX** acknowledge that it correctly records the understanding they have reached with regard to the Project.

8.28 M/s **XXX** shall be liable to BECIL to compensate any losses or damages if so suffered by BECIL for any breach of this agreement and/ or action initiated by the **Client** for non-performance of the contract.

8.29 Nothing in this agreement shall constitute, create or give effect or recognize a, partnership or business entity of any kind.

8.30 On award of the work of the **Client** tender to BECIL, BECIL may enter into a detailed Inter-se Agreement with M/s **XXX** based on the terms and Conditions of the agreement, BECIL EOI, **Client** tender as well as the Contract signed between BECIL & **Client**.

8.31 After mutual consultation, a joint team consisting of representatives of the parties will be formed for various activities like, technical discussions, deciding the preparation of final Bid/ offer, terms & conditions and demonstration of functionality required in the **Client** Tender/Work/Project.

8.32 Expenses towards bid preparation would be borne by the individual Parties viz. BECIL and M/s **XXX** for their respective work. BECIL will not reimburse any such expenses to M/s **XXX** towards preparation and submission of the bid.

8.33 Notwithstanding anything contained in any other agreement, document, correspondence, arrangement between the parties in respect of **Client** Tender/ Works / Projects, the M/s **XXX** understands, agrees and undertakes that:

8.33.1 At any given point of time, M/s **XXX** may not assign or delegate its rights, duties or obligations under this agreement to any other party, without prior written consent of BECIL.

8.33.2 In the event of breach of any of the terms & conditions of this agreement or in case of any default of any terms & conditions of this agreement, on the part of M/s **XXX**, BECIL reserves the right to take necessary steps / action as per available documents, including but not limited to, termination of contract, forfeiture of Performance Security / EMD, blacklisting / banning etc. and execute the work at the risk & cost of the M/s **XXX**.

8.34 **BLACKLISTING/ DEBARMENT**

M/s **XXX** shall be debarred/blacklisted from bidding for the contract/tender/EOI floated by BECIL for a period of two years, for violation of the code of integrity, Conflict of Interest as well as for the material breach of terms and conditions of the tender as per the General Financial Rules 2017 and the Guidelines for debarment of firms from bidding issued by the Department of Expenditure, Ministry of Finance no. F1/20/2018 –PPD dated 02.11.2021.

8.35 **COUNTERPARTS**

This agreement is executed in two counterparts, with each party retaining one original.

8.36 **ENTIRE AGREEMENT**

This agreement hereto constitutes the entire agreement between the Parties with regard to the subject matter contained in this agreement and supersedes all prior negotiations, representations, agreement and understandings, written or oral preceding the execution of this agreement.

IN WITNESS WHEREOF, the parties hereto, intending to be legally bound, have executed this Pre-Bid Agreement as of the date first above mentioned.

This Agreement has been signed on behalf of the parties by their respective duly authorized representatives as of the Effective Date.

On Behalf of BECIL	**On Behalf of …….**
Name: …… **Designation:** …….. **Address:** Broadcast Engineering Consultants India Limited, 14-B, Ring Road, I.P.Estate, New Delhi-110002 **Email: …….**	**Name.....,** **Designation:** ……. **Address:** ……. ……. **Email**: ……

1 Signature of Witness: Name: Title:	1 Signature of Witness: Name: Title:
2 Signature of Witness: Name: Title:	2 Signature of Witness: Name: Title:

Annexure – K

Power of Attorney for signing the Bid on Rs. 100 Stamp Paper

Know all men by these presents,

We "Name of Bidder" do hereby irrevocably constitute, nominate, appoint and authorize _____, who is presently employed with us and holding the position of **"_____"**, as our true and lawful attorney *(hereinafter referred to as the "Attorney")* to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our application for qualification and submission of our bid for the Project "**Name of Project"** of "_ **"** (the "client") including but not limited to signing and submission of all applications, bids and other documents and writings, participate in pre-applications and other conferences and providing information/ responses to the client, representing us in all matters before the client, signing and execution of all contracts including the Agreement and undertakings consequent to acceptance of our bid, and generally dealing with the client in all matters in connection with or relating to or arising out of our bid for the said Project and/ or upon award thereof to us and/or till the entering into of the Agreement with the client. The act done by _____(Name of authorized person) will be binding on the selected bidder.

IN WITNESS WHEREOF WE, (Name of Bidder)___, THE ABOVE-NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF Date_____**.**

For **Name of Bidder**,

_____

_____

Accepted

Witnesses:

1. (Notarized)

Annexure – L

Format for Compliance w.r.t. to Land Border Clause

<To be submitted on Agency's Letter Head>

Declaration

EOI Reference no.: …… Dated: ……..

I/We certify that this Bidder M/s.....is not from such a country or if from such a country has been registered with the competent authority. I hereby certify that this bidder fulfills all requirements in this regard.

I/We certify that this Bidder is not from such a country or if from such a country has been registered with the competent authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the competent authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered.

Authorized Signatory with Date and Seal:
Designation:
Business:
Address:
Signature:
Seal:
Date & Time:

Annexure-M

NON-DISCLOSURE AGREEMENT

For EOI Reference No.- …… dated ……

THIS AGREEMENT is made on this the ……. day of …… 2026 at. , by and between:

M/s Broadcast Engineering Consultants India Limited, a Mini Ratna, Public Sector Enterprise, falling under the purview of the Ministry of Information and Broadcasting under the Government of India having its Registered Office at 56-A/17, Block-C, Sector-62, Noida -201301 (U.P.) and Head Office at 14-B IP Estate Ring Road, New Delhi -110002 acting through .....[*name of officer*], authorized vide a Board Resolution dated .....Hereinafter referred to as **"BECIL or "Disclosing Party ")** which expression shall unless repugnant to the context or meaning thereof, include its successors, authorized representatives and permitted assigns.

AND

M/s ……., a Private Limited Company incorporated on.....under the purview of the provisions of the Companies Act 1956, having its registered address at.....authorized vide a Board Resolution dated ……., Hereinafter referred to as the "Second Party" or "Receiving Party") which expression shall unless repugnant to the context or meaning thereof, include its successors, authorized representative and permitted assigns.

Whereas Broadcast Engineering Consultants India Limited is an ISO 9001:2015, 27001:2013, ISO/IEC 20000:2012 is a certified, Mini Ratna, Central Public Sector Enterprise (CPSE) falling under the purview of Ministry of Information and Broadcasting, Government of India, and was established on 24th March 1995. That M/s BECIL provides Project Consultancy services, turnkey solutions, System integration, Operation & Maintenance services for the entire gamut of radio and television broadcast engineering projects and has also gradually diversified into the domain of businesses pertaining to strategic national importance and has won major Projects/ Tenders in the field of security & surveillance, IT networking, Data center and Communication Intelligence

Whereas M/s BECIL has floated an EOI /Tender with reference no. …… dated ……. for the selection of an agency for the execution of the …….

WHEREAS in pursuance to this EOI, it is recognized that certain confidential information shall be disclosed by BECIL to the Receiving Party That the Confidential Information shall belong to BECIL/Disclosing Party as the case may be and shall be transferred to the Receiving Party to be used only for the business purpose and hence there is a need to protect such information from un-authorized use and disclosure

NOW THEREFORE, in consideration of the mutual covenants, promises, assurances, representations and provisions set forth herein, the Parties hereto agree as follows:

1. INTERPRETATION

1.1 In this agreement, unless otherwise specified:

(i) references to clauses, Sub-clauses, Paragraphs and Schedules are to clauses, sub-clauses, paragraphs of and schedules to this Agreement;

(ii) use of any gender includes the other genders;

(iii) references to a 'company' shall be construed so as to include any company, corporation or other body corporate, wherever and however incorporated or established;

(iv) references to a 'person' shall be construed so as to include any individual, firm, company, government, state or agency of a state, local or municipal authority or government body or any joint venture, association or partnership (whether or not having separate legal personality);

(v) a reference to any statute or statutory provision shall be construed as a reference to the same as it may have been, or may from time to time be, amended, modified or re-enacted;

(vi) any reference to a 'day' (including within the phrase 'business day') shall mean a period of 24 hours running from midnight to midnight;

(vii) references to a 'business day' shall be construed as a reference to any day that is not a Sunday or a public holiday and starts at 9 am;

(viii) references to times are to Indian standard time;

(ix) a reference to any other document referred to in this Agreement is a reference to that other document as amended, varied, novated or supplemented at any time; and

(x) all headings and titles are inserted for convenience only. Ambiguities.

2. TERM

2.1 This Agreement will remain in effect till a six (6) month period post the expiry of the contract unless explicitly extended by BECIL.

3. SCOPE OF THE AGREEMENT

3.1 This Agreement shall apply to all confidential and proprietary information disclosed by Disclosing Party to the Receiving Party and other information which the disclosing party identifies in writing or otherwise deems confidential before or within (30) thirty days after disclosure to the Receiving Party as ("Confidential Information").

3.2 Such Confidential Information shall consists of EOI , certain specifications, documents, software, prototypes and/or technical information, and all copies and derivatives containing such Information that may be disclosed to the Disclosing Party for and during the Business Purpose, which a party considers proprietary or confidential.

3.3 Such Confidential Information may be in any form or medium, tangible or intangible, and may be communicated/disclosed in writing, orally, or through visual observation or by any other means to the Receiving Party.

4. OBLIGATIONS OF THE RECEIVING PARTY

4.1 The Receiving Party shall –

i. use the Confidential Information only for the Business Purpose and shall hold the Confidential Information in confidence using the same degree of care as it normally exercises to protect its own proprietary information, taking into account the nature of the Confidential Information, and

ii. Grant access to Confidential Information only to its employees on a "need to know basis" and restrict such access as and when not necessary to carry out the Business Purpose.

iii. Cause its employees to comply with the provisions of this agreement;

iv. Reproduce Confidential Information only to the extent essential to fulfilling the Business Purpose, and

v. Disclose the Confidential Information to its consultants/ contractors/ any third parties on a "need to know basis"; provided that by doing so, the Receiving Party agrees to bind such consultants/ contractors to terms at least as restrictive as those stated herein.

vi. The Receiving Party upon making a disclosure under this clause shall –
a. advise the consultants/contractors of the confidentiality obligations imposed on them by this clause.

vii. Upon the Disclosing Party's request, the Receiving Party shall either return to the disclosing party all Confidential Information or shall certify to the disclosing party that all media containing Confidential Information have been destroyed. Provided, however, that an archival copy of the Confidential Information may be retained in the files of the Receiving Party's counsel, solely for the purpose of proving the contents of the Confidential Information.

viii. Not to remove any of the other Party's Confidential Information from the premises of the Disclosing Party Without prior written approval.

ix. Exercise extreme care in protecting the confidentiality of any Confidential Information which is removed, only with the Disclosing Party's prior written approval, from the Disclosing Party's premises. Each Party agrees to comply with any and all terms and conditions the disclosing party may impose upon any such approved removal, such as conditions that the removed Confidential Information and all copies must be returned by a certain date, and that no copies are to be made off of the premises.

x. Upon the Disclosing Party's request, the Receiving Party shall promptly return to the Disclosing Party all tangible items containing or consisting of the disclosing party's Confidential Information all copies thereof.

5. EXCEPTIONS TO CONFIDENTIAL INFORMATION

5.1 The foregoing restrictions on each party's use or disclosure of Confidential Information shall not apply to the Confidential Information that the Receiving Party can demonstrate that such Confidential Information –

(i) Was independently developed by or for the Receiving Party without reference to the Information, or was received without restrictions; or

(ii) has become generally available to the public without breach of confidentiality obligations of the Receiving

Party;

(iii) was in the Receiving Party's possession without restriction or was known by the Receiving Party without restriction at the time of disclosure;

(iv) is the subject of a subpoena or other legal or administrative demand for disclosure; provided, however, that the Receiving Party has given the disclosing party prompt notice of such demand for disclosure and the Receiving Party reasonably cooperates with the disclosing party's efforts to secure an appropriate protective order; or

(v) is disclosed with the prior consent of the disclosing party;

(vi) was in its possession or known to it by being in its use or being recorded in its files or computers or other recording media prior to receipt from the disclosing party and was not previously acquired by the Receiving Party from the disclosing party under an obligation of confidence; or

(vii) The Receiving Party obtains or has available from a source other than the disclosing party without breach by the Receiving Party or such source of any obligation of confidentiality or non-use towards the disclosing party.

6. OWNERSHIP OF THE CONFIDENTIAL INFORMATION

6.1 Each Party recognizes and agrees that all of the disclosing Party's Confidential Information is owned solely by the Disclosing Party (or its licensors) and that the unauthorized disclosure or use of such Confidential Information would cause irreparable harm and significant injury, the degree of which may be difficult to ascertain.

6.2 By disclosing the Confidential Information or executing this agreement, Disclosing Party does not grant any license, explicitly or implicitly, under any trademark, patent, copyright, mask work protection right, trade secret or any other intellectual property right. The Disclosing Party disclaims all warranties regarding the information, including all warranties with respect to infringement of intellectual property rights and all warranties as to the accuracy or utility of such information.

6.3 Access to Confidential Information hereunder shall not preclude an individual who has seen such Confidential Information for the purposes of this agreement from working on future projects for the Disclosing Party which relate to similar subject matters, provided that such individual does not make reference to the Confidential Information and does not copy the substance of the Confidential Information during the Term. Furthermore, nothing contained herein shall be construed as imposing any restriction on the Receiving Party's disclosure or use of any general learning, skills or know-how developed by the Receiving Party's personnel under this agreement.

6.4 Execution of this agreement and the disclosure of Confidential Information pursuant to this agreement do not constitute or imply any commitment, promise, or inducement by either Party to make any purchase or sale, or to enter into any additional agreement of any kind.

7. DISPUTE RESOLUTION

7.1 If a dispute arises in relation to the conduct of this Contract (Dispute), a both the parties shall try to amicably resolve the dispute before invoking the arbitration clause.

7.2 any dispute(s)/ controversy(s)/ issue(s) arising out of or in connection with the contract, including any question regarding its existence or validity shall be referred to and finally resolved by Arbitration administered by the Delhi International Arbitration Centre as per the Delhi International Arbitration Centre proceeding Rules 2023.

7.3 The Aggrieved party wishing to refer a dispute to Arbitration shall give a notice to the Defaulting Party specifying all the points of dispute(s) with details of corresponding the claim amount.

7.4 The Arbitration Proceeding shall commence within a span of **thirty days** from the date of receipt of Invocation Notice complete in all respects as mentioned above.

7.5 The dispute(s)/ difference(s)/controversy(s) shall be adjudicated by a single/sole Arbitrator empaneled with the Delhi International Arbitration Centre.

7.6 The seat of Arbitration shall be at New Delhi and the Arbitration proceeding shall be conducted in English.

7.7 The award of Sole Arbitrator shall be final and binding on the parties and unless directed/awarded otherwise by the Sole Arbitrator, the cost of arbitration proceedings shall be shared equally by both the parties.

7.8 The provision of the Arbitration and Conciliation Act, 1996 as amended and applicable from time to time shall apply to the Arbitration proceedings under this Contract.

8. INJUNCTION

8.1 The Receiving Party agrees that the Disclosing Party shall have the right to obtain an immediate injunction enjoining any breach of this agreement, as well as the right to pursue any and all other rights and remedies available at law or in equity for such a breach.

9. VARIATION

9.1 This agreement may only be varied in writing and signed by both Parties.

10. WAIVER

10.1 Waiver including partial or conditional waiver, by either Party of any default by the other Party in the observance and performance of any provision of or obligations under this agreement:-

(i) shall be in writing

(ii) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this agreement;

(iii) shall be executed by a duly authorised representative of the Party; and

(iv) shall not affect the validity or enforceability of this agreement in any manner.

11. EXCLUSION OF IMPLIED WARRANTIES

11.1 This agreement expressly excludes any warranty, condition or other undertaking implied at law or by custom or otherwise arising out of any other agreement between the Parties or any representation by either Party not contained in a binding legal agreement executed by both Parties.

12. ENTIRE AGREEMENT

12.1 This agreement together constitute a complete and exclusive statement of the terms of the agreement between the Parties on the subject hereof, and no amendment or modification hereto shall be valid and effective unless such modification or amendment is agreed to in writing by the Parties and duly executed by persons especially empowered in this behalf by the respective Parties. All prior written or oral understandings, offers or other communications of every kind pertaining to this agreement are abrogated and withdrawn.

13. SEVERABILITY

13.1 If for any reason whatever, any provision of this agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforce- ability of the remaining provisions shall not be affected in any manner, and the Parties shall negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is Practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to the dispute resolution procedure set forth under this agreement or otherwise.

14. NO PARTNERSHIP

14.1 This agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party, and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party except as expressly provided under the terms of this agreement.

15. THIRD PARTIES

15.1 This agreement is intended solely for the benefit of the Parties and their respective successors and permitted assigns, and nothing in this agreement shall be construed to create any duty to, standard of care with reference to, or any liability to, any person not a Party to this agreement.

16. SUCCESSORS AND ASSIGNS

16.1 The agreement shall be binding on and shall inure to the benefit of the Parties and their respective successors and permitted assigns.

17. NOTICES

17.1 Any notice or other communication to be given by any Party to the other Party under or in connection with the matters contemplated by this agreement shall be in writing and shall be given by hand delivery, recognized courier, registered post, email or facsimile transmission and delivered or transmitted to the Parties at their respective addresses set forth below –

Broadcast Engineering Consultants India Ltd
14-B, Ring Road, I.P.Estate, New Delhi-110002
Telephone: 011-23378823
Name of the authorized person-
Contact: E-mail:

M/s …….
Name of the authorized person
Designation of the authorized person
Contact:
Email:

17.2 All notices required to be given by one Party to the other Party and all other communications, documentation and proceedings which are in any way relevant to this agreement shall be in writing and in the English language.

18. MITIGATION

18.1 Without prejudice to any express provisions of this agreement on any mitigation obligations of the Parties, each of BECIL and the Receiving party shall at all times take all reasonable steps to minimize and mitigate any loss for which the relevant Party is entitled to bring a claim against the other Party pursuant to this agreement.

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

SIGNED	**SIGNED**
For and on behalf of BECIL	**For and on behalf of the Receiving**
Party (Signature)	**(Signature)**

In the presence of:

1. _____

2. _____

Annexure-N

BANK GUARANTEE FORMAT FOR EARNEST MONEY DEPOSIT
(On Rs 100 Non Judicial Stamp Paper)

Ref. No. ……

To
Broadcast Engineering Consultants India Limited
14-B, Ring Road, I.P.Estate, New Delhi-110002

Dear Sir,
Whereas The Broadcast Engineering Consultants India Limited, New Delhi (hereinafter called the "tenderer/Purchaser') include all its successors, administrators, executors and assignees has invited bids dated …… for _____ vide Tender reference No. …… KNOW ALL MEN by these presents that We M/s _____ (hereinafter called the "Bidder") and include alt its successors, administrators executors and assignees having Head Office/ Registered office at _____ have submitted a Bid response vide Reference No. _____ and Bidder having agree to furnish as a conditions precedent for participation in tender as unconditional and irrevocable bank guarantee of Rs _____ (Rupees _____only) for the due performance of Bidder's obligations as contained in the terms of the Notice inviting tender and other terms and conditions contained in the tender Documents supplied by the BECIL specially :

The Conditions of obligations are-

a) If the Bidder withdraws or amends, impairs or derogates from the Bid in any respect within the period of validity of this tender.

b) If the Bidder having been notified of the acceptance of his tender by the Buyer during the period of its validity.

c) If the Bidder fails to furnish the Performance Security for the due performance of the contract.

d) Fails or refuses to accept/execute the contract.

2) Therefore, we _____ (indicate the name of Bank) under the laws of _____ having head/registered office at (hereinafter referred to as the "Bank") which expression shall, unless repugnant to the context or BECIL thereof, include all its successors, administrators and executors hereby issue irrevocable and unconditional bank guarantee and undertake to pay immediately on first demand in writing Rupees all money to the extent of Rs _____ (Rupees _____ only) at any time immediately on such demand without any demur, reservations, recourse, contest or protest and/ or without any reference to the Bidder and any such demand made by the BECIL on the bank shall be conclusive and binding notwithstanding any difference between the BECIL and the Bidder or any dispute pending before any court/arbitrator or any other matter whatsoever. We also

agree to give that Guarantee herein the BECIL in writing. This guarantee shall not be determined/discharged/affected by the liquidation, winding up, dissolution or insolvency of the Bidder and will remain valid, binding and operative against the bank.

3) We _____ (Bank name) further agree that this guarantee shall not be affected by any change in our constitution, in the constitution of the BECIL or that of the Bidder. We _____Bank name) also undertake not to revoke, in any case, this Guarantee during its currency.

4) The bank agree with the BECIL that the BECIL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms of the tender or get extension of the validity period from time to time. We shall not be relieved from our liability by reason of any such variation or extension of the validity period or for any forbearance, act of omission and commission on the part of the BECIL or any indulgence shown by the BECIL to the said Bidder or by any such matter or thing whatsoever which under the law relating to sureties, would, but for this provision, have the effect of so relieving us.

5) This guarantee will remain in force upto 180 days from the date of final submission of Bid to the client and any demand in respect thereof should reach the Bank not later than _____.

6) Not withstanding anything contained herein above.
(i) Our liability under this guarantee shall not exceed Rs. _____/- (Rupees _____ Only)

(ii) This Guarantee shall be valid up to and including _____ and

(iii) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you have served upon us a written claim of demand on or before expiry of this guarantee i.e. _____, Dated the day _____(year).

……

(Signature of the authorized officer of the Bank)

……

(Name and designation of the officer, Seal, Name & Address of the Bank & Branch)

Annexure-O

PRICE BID FORMAT

				A	B	C	D	D
S.No.	**Item Description**	**Qty**	**Units**	**Lump Sum Price offered for the complete Project (inclusive of AMC, Spares etc.) as per full Scope of Work (exclusive of GST)**	**NET margin offered to BECIL on Total Value of Project (IN Figure %)**	**A*B**	**A-C**	**Total D in figure**
1	**Description Of Work**	**1**	**Lot**					

Note: Bidders to provide the Price Breakup as per the Format of the Client's BOQ .

Annexure-P

Self- Declaration stating that bid is signed by an authorized person

(To be submitted on the firm's letter head and signed by an authorized person - Documentary proof authorizing the person by the bidder to be attached)

To,
Mr. Bipin B. Pandey
Deputy General Manager,
Broadcast Engineering Consultants India Limited
14-B, Ring Road, I.P.Estate, New Delhi-110002

Ref: Bid Document No. Dated:

Sir/ Ma'am,

Having examined the bid documents, the receipt of which is hereby duly acknowledged, I/We, the undersigned is deemed to have accepted the same without any violations and/or deviations etc. pertaining to the tender scope, validity of quoted rates in line & pursuance to the schedule of requirements & all terms & conditions of the tender and in conformity with the said bidding documents.

We undertake, if our bid is accepted, to deliver the entire scope of work in accordance with the delivery schedule specified in the tender/Bid/EOI etc. documents.

If our bid is selected as successful bid, we will submit the required Performance Bank Guarantees/Securities (PBG), as per the Annexure prescribed in client's Tender.

The same will also be treated as security deposits in case of defaults like non-delivery, cancellation, liquidated damages, penalties etc. valid during the entire period of contract plus three months.
We agree to abide by this bid for a period of 180 Days after the date fixed for opening and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

I/We undertake that on completion of the validity period, unless the I/We withdraw my/our bid in writing by giving a notice of seven working days, it will be deemed to be valid until such time that I/we really withdraw my/our bid.

Herein, we declare:

That we have a team of technically qualified officials and have state of the art infrastructure, and that our office premises are equipped with all the facilities specified in the document.

2. We hereby offer to supply the Services at the prices and rates mentioned by us in the Financial Bid Format/Schedule.

3. We have satisfied ourselves as to the correctness and sufficiency of the Contract Price cover all its obligations under the Contract.

4. We enclose herewith the complete Eligibility Criteria Bid as required by you.

5. We have carefully read and understood the terms and conditions of the bid document and the conditions of the contract applicable to the bid document and we do hereby undertake to supply as per these terms and conditions.

6. Certified that the bidder is a company and the person signing the document is the authorized signatory/constituted attorney.

7. We do hereby undertake that, until a real work order is prepared and executed, this bid, together with your written acceptance thereof and placement of letter of intent awarding the work order, shall constitute a binding contract between us.

Dated this day of 20_____

Signature of Authorized Signatory of Bidder
Official Address:_____
Telephone No.
Telegraphic Address:
Fax No.
E-mail
Contact Person Name:
Contact Person Mobile No:
Contact Person email:

Annexure-Q

CERTIFICATION FOR LOCAL CONTENT

It is certified that we M/s _____, the Statutory Auditor or Cost Auditor of the Company *(in the case of company)* or from a practicing cost accountant or chartered accountant *(in case of other than company)*, M/s _____ *(name of the Bidder)* who have informed us that they are submitting their Bid to BECIL for the work of:

Bid No. & Name of Work: _____

We certify that the M/s _____ fulfills to qualify as Class-I / Class-II local Supplier or Service Provider *(Strike out whichever is not applicable)* in terms of Public Procurement (Preference to Make in India), Order 2017.

M/s _____ meet _____ % of Local Content for _____ to be supplied against Bid No. _____ of NCRTC.

Seal and Signature of the
Statutory Auditor or Cost Auditor /
Practicing Cost Accountant or Chartered Accountant
of M/s _____

UDIN No. _____

ANNEXURE R

OEM AUTHORIZATION LETTER CUM CERTIFICATE

[To be submitted on the Letterhead of the Original Equipment Manufacturer (OEM)]

Date: _____

To,
Broadcast Engineering Consultants India Limited (BECIL)
14-B, Ring Road, I.P. Estate,
New Delhi – 110002

Subject: OEM Authorization Letter cum Certificate for NCRTC Tender

Reference:
NCRTC Bid No. **DM/EL/COR-OF/317**

Name of Work: "Design, Supply, Installation, Testing, Commissioning and Integrated Test of Façade Lighting Work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad-Meerut Namo Bharat Corridor of NCRTC."

Dear Sir/Madam,

We, **M/s** _____, having our registered office at _____, being the Original Equipment Manufacturer (OEM)/Manufacturer of Light Fixtures, hereby confirm and certify that:

1. We hereby authorize **M/s** _____ **[Bidder/Implementation Agency]**, having its registered office at _____, to participate in the above-mentioned tender through Broadcast Engineering Consultants India Limited (BECIL) and to offer our products/make for the proposed work.
2. We confirm that the Bidder is authorized to offer our lighting fixtures, luminaires, drivers, control systems and associated accessories, as applicable, for the subject project.
3. We confirm our commitment to provide necessary lighting design and simulation services, including technical assistance for preparation/review of lighting design, illumination strategy, lux calculations, lighting simulations, fixture selection, beam-angle selection and aiming, control architecture and other technical requirements as applicable to the project.
4. We confirm that we shall provide necessary technical support during installation, testing and commissioning, including deployment of competent OEM technical experts wherever required.
5. We confirm our commitment towards supply of genuine, new and defect-free products through authorized channels and shall ensure product quality, traceability and compliance with the applicable technical specifications and standards prescribed by NCRTC.
6. We undertake to provide necessary warranty support, technical support, commissioning support and maintenance support throughout the execution, DLP and AMC/CAMC period, as applicable.
7. We confirm that the required lighting simulation, lux levels, uniformity, colour consistency and visual appearance as approved by NCRTC shall be achieved at site, subject to the approved design and site conditions.
8. We shall provide technical assistance for installation, mounting, aiming, testing, commissioning, programming, configuration and integration of the lighting and control systems, as applicable.
9. We confirm our commitment to provide necessary technical support during the **2-year Defect Liability Period (DLP) and subsequent 3-year AMC/CAMC period** prescribed under the Client's Tender.

10. We undertake to provide necessary spares, replacement components, drivers, controllers and other associated accessories required for maintenance and satisfactory operation of the supplied system during the applicable contractual period.
11. We confirm that the offered products shall not be discontinued during the applicable contractual requirements and, in case any offered product is discontinued, we shall provide an equivalent or superior replacement product, subject to approval of NCRTC.
12. We shall extend back-to-back technical and warranty support to the Bidder/BECIL throughout the execution, commissioning, DLP and AMC/CAMC period, as applicable.
13. We confirm that the products offered shall comply with the applicable BIS/IS, LM-79, LM-80, TM-21, IES, IP/IK, electrical safety, surge protection and other applicable technical/testing requirements, wherever prescribed for the relevant product.
14. We confirm availability of the required OEM technical experts and support resources for the project.
15. We confirm that we shall provide access to the Employer/NCRTC for verification of the information and certifications furnished by us, wherever required.
16. We confirm that the Bidder shall offer only the make/model(s) authorized by us under this authorization and no alternate OEM/make shall be proposed without the prior approval of NCRTC, wherever such approval is required.
17. We confirm that the Bidder shall be supported by us for fulfilling all applicable technical requirements of the NCRTC Tender, including subsequent Addenda, Corrigenda, Clarifications and Amendments issued by NCRTC.
18. We confirm that this Authorization Letter cum Certificate shall remain valid for the purposes of tender evaluation, execution, testing, commissioning, DLP and AMC/CAMC, as applicable under the Client's Tender.
19. We further confirm that the OEM shall remain responsible for providing the commitments stated herein and in the applicable NCRTC Annexure-4 / Appendix-1 OEM Authorization Letter cum Certificate.
20. We understand that failure to submit the required OEM authorization/certificate or any material misrepresentation therein may result in rejection/non-responsiveness of the bid, as applicable under the Client's Tender.

Particular	**Details**
Name of OEM	
Registered Address	
Manufacturing Facility Address	
Name of Authorized Representative	
Designation	
Mobile No.	
E-mail ID	
OEM Website	
Product/Make Authorized	
Model/Series, if applicable	

For and on behalf of OEM
M/s _____
Signature: _____
Name: _____
Designation: _____
Contact No.: _____
E-mail ID: _____
Company Seal

ANNEXURE S

ELECTRICAL CONTRACTOR LICENCE & STATUTORY ELECTRICAL COMPLIANCE

[To be submitted on the Letterhead of the Bidder/Implementation Agency]

Date: _____

To,
Broadcast Engineering Consultants India Limited (BECIL)
14-B, Ring Road, I.P. Estate,
New Delhi – 110002

Subject: Declaration regarding Valid Electrical Contractor Licence and Statutory Compliance

Reference:
NCRTC Bid No. **DM/EL/COR-OF/317**

Name of Work: "Design, Supply, Installation, Testing, Commissioning and Integrated Test of Façade Lighting Work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad-Meerut Namo Bharat Corridor of NCRTC."

We, **M/s _____**, having our registered office at **_____**, hereby declare and confirm that:

1. We possess a **valid Electrical Contractor's Licence of the appropriate class** applicable for execution of the electrical works under the subject project.
2. The details of our Electrical Contractor's Licence are as follows:

Particular	Details
Name of Licence Holder/Firm	
Electrical Contractor Licence No.	
Licence Class	
Issuing Authority	
State	
Date of Issue	
Validity up to	
Scope/Category of Licence	

3. We confirm that the aforesaid Electrical Contractor's Licence shall remain valid throughout the period required for execution of the work and shall be renewed/extended as necessary to maintain continuous statutory validity.
4. We undertake to deploy **suitably qualified and competent supervisors, electricians, skilled workers and other technical personnel** as required for execution of the works.
5. We confirm that the supervisors and skilled workers deployed for the project shall possess the necessary qualifications, permits, authorizations and competency certificates, wherever required under applicable laws, rules and regulations.
6. We undertake to comply with all applicable requirements of the **Electrical Inspector/competent statutory authority**, Indian Electricity Rules/Regulations and other applicable statutory requirements relating to execution, testing and commissioning of the electrical works.

7. We undertake to obtain and maintain all necessary statutory approvals, permissions, inspections and clearances required for execution, testing and commissioning of the works, as applicable.
8. We confirm that all electrical works shall be executed in accordance with the applicable statutory requirements, approved drawings, technical specifications and directions of NCRTC/BECIL.
9. We undertake to ensure compliance with applicable safety requirements, including electrical safety procedures, isolation/LOTO procedures and other site safety requirements prescribed by NCRTC and the competent authorities.
10. We understand that submission of a valid Electrical Contractor's Licence and compliance with applicable statutory requirements is a mandatory requirement for execution of the subject work wherever applicable under the Client's Tender.
11. We undertake to immediately inform BECIL/NCRTC in case of any suspension, cancellation, expiry or material change in the status of the Electrical Contractor's Licence during the execution of the project.
12. We hereby certify that the information furnished above is true and correct and that the attached licence/document is valid and genuine.

Supporting Documents

The following documents are enclosed:

1. Copy of valid Electrical Contractor's Licence of appropriate class.
2. Copy of relevant renewal/validity document, wherever applicable.
3. Details/copies of permits or competency certificates of supervisors/skilled personnel, wherever applicable.
4. Any other statutory authorization/document required for execution of the electrical works.

For and on behalf of the Bidder

M/s _____

Signature: _____

Name: _____

Designation: _____

Contact No.: _____

E-mail ID: _____

Company Seal

ANNEXURE T

OEM TECHNICAL, TESTING AND PRODUCT COMPLIANCE DOCUMENTS

[To be submitted by the Bidder along with the relevant documents issued by the proposed OEM/Manufacturer]

Date: _____

To,
Broadcast Engineering Consultants India Limited (BECIL)
14-B, Ring Road, I.P. Estate,
New Delhi – 110002

Subject: OEM Technical, Testing and Product Compliance Documents

Reference:
NCRTC Bid No. **DM/EL/COR-OF/317**

Name of Work: "Design, Supply, Installation, Testing, Commissioning and Integrated Test of Façade Lighting Work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad-Meerut Namo Bharat Corridor of NCRTC."

We, **M/s** _____, hereby submit the following technical, testing and product compliance documents of the proposed OEM/Manufacturer **M/s** _____ for the lighting fixtures proposed for the subject project.

Sl. No.	Document / Certificate	Submitted / Not Applicable	Document Reference / Page No.
1	OEM ISO 9001:2015 Certificate		
2	OEM ISO 14001:2015 Certificate		
3	OEM ISO 45001:2018 Certificate		
4	OEM NABL-accredited laboratory certificate, wherever applicable as per the latest NCRTC Tender requirements		
5	Relevant LM-79 Test Report issued by NABL-accredited laboratory		
6	Relevant LM-80 Test Report issued by the LED Manufacturer		
7	TM-21 Report, wherever applicable		
8	BIS/IS Certificate, wherever applicable		
9	Product Datasheets / Technical Datasheets		
10	Photometric Data / Polar Curves / Illuminance Data		
11	IES Files, wherever applicable		
12	IP Rating Compliance Certificate/Test Report		
13	IK Rating Compliance Certificate/Test Report		
14	Electrical Safety / Applicable Electrical Test Certificates		
15	Surge Protection Compliance/Test Report, wherever applicable		
16	RoHS Compliance Certificate		
17	CE Certificate, wherever applicable		
18	Warranty / Product Warranty Certificate		
19	Other applicable product testing/compliance certificates prescribed		

Sl. No.	Document / Certificate	Submitted / Not Applicable	Document Reference / Page No.

under the Client's Tender

DECLARATION

We hereby certify and confirm that:

1. The above documents relate to the proposed OEM/Manufacturer and the products/makes proposed for the subject NCRTC project.
2. The products proposed shall comply with the technical specifications, performance requirements and applicable testing/certification requirements prescribed in the latest NCRTC Tender, including all applicable Addenda, Corrigenda, Clarifications and Amendments.
3. All certificates, test reports and technical documents submitted by us are genuine, valid and traceable to the concerned OEM/product.
4. Wherever any certificate or test report is not applicable to a particular product, the same has been clearly identified as **"Not Applicable"** with appropriate justification.
5. We undertake to furnish any additional technical documents, certificates, test reports or clarifications required by BECIL/NCRTC during technical evaluation, execution, testing, commissioning, DLP or AMC/CAMC, as applicable.
6. We understand that NCRTC/BECIL may verify the authenticity and validity of the certificates, test reports and other technical documents submitted by us with the concerned OEM, certification body or testing laboratory.
7. We confirm that **ISO 50001 is not being submitted as a mandatory eligibility requirement**, unless specifically required by a subsequent Client amendment/corrigendum.

DETAILS OF PROPOSED OEM

Name of OEM: _____

Registered Address: _____

Manufacturing Facility: _____

Brand/Make: _____

Contact Person: _____

Designation: _____

Contact No.: _____

E-mail: _____

Website: _____

For and on behalf of the Bidder

M/s _____

Signature: _____

Name: _____

Designation: _____

Contact No.: _____

E-mail ID: _____

Company Seal

_____END OF DOCUMENT_____

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED

(A JV of Government of India and participating State Governments)

नमो भारत
Transit service by ncrtc



BIDDING DOCUMENTS

For

Bid No. DM/EL/COR-OF/317
Subject: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

Issued on:12.08.2026
Invitation for Bids No.: DM/EL/COR-OF/317

Employer: National Capital Region Transport Corporation Limited

CONTENTS OF BIDDING DOCUMENTS

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SECTION 1- INSTRUCTIONS TO BIDDERS (ITB)
SECTION 2- BID DATA SHEET (BDS)
SECTION 3- EVALUATION AND QUALIFICATION CRITERIA (EQC)
SECTION 4- BIDDING FORMS (BF)
SECTION 5- NATIONALITY
PART- II REQUIREMENTS
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SECTION 6B: SPECIFICATIONS
SECTION 6C: SAFETY, HEALTH & ENVIRONMENT (SHE) DOCUMENT
SECTION 6D: BID DRAWINGS
PART-III CONDITIONS OF CONTRACT AND CONTRACT FORMS
SECTION 7 - GENERAL CONDITIONS OF CONTRACTS (GCC)
SECTION 8 - PART A: APPENDIX TO BID
SECTION 8 - PART B: PARTICULAR CONDITIONS OF CONTRACT (PCC)
SECTION 9 - CONTRACT FORMS (CF)
FINANCIAL/ PRICE BID IN EXCEL FORMAT

Section 1: Instructions to Bidders

This Section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening, evaluation of bids, and award of contract.

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राष्ट्रीय राजधानी क्षेत्र परिवहन निगम लि. एन.सी.आर.टी.सी. Ga:Shakti Bhawan, INA, New Delhi-110023 NCRTC National Capital Region Transport Corporation Ltd.

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Ga..Shakti Bhawan, INA, New Delhi-110023 NCRTC National Capital Region Transport Corporation Ltd.

A. General	
1. Scope of Bid	1.1 In connection with the Invitation for Bids indicated in the Bid Data Sheet **(BDS)**, National Capital Region Transport Corporation Ltd. (NCRTC), hereinafter referred to as the 'Employer', issues this Bidding Document for the Procurement of Works as specified in Section 6 (Employers Requirements). The name, identification, and number of contract(s) are provided in the **BDS**. 1.2 This Bidding Document is not transferable.
	1.3 Throughout this Bidding Document, (a) the term "in writing" means communicated in written form and delivered against receipt; (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and (c) "day" means calendar day. (d) "week" means a period of seven days.
	1.4 Instructions of using e-Procurement Portal of NIC for Bid Searching, Preparation and Submission: **Instructions of using e-Procurement Portal for Bid Searching, Preparation and Submission:** The Bidders are required to submit soft copies of their bids electronically on the e-Procurement Portal of NIC https://etenders.gov.in/eprocure/app, using valid DSC. The instructions given below are meant to assist the bidders in registering on the e-Procurement Portal, prepare their bids in accordance with the requirements and submitting their bids online on the e-Procurement Portal. More information useful for submitting online bids on the Portal may be obtained on the same portal of NIC. 1) Bidders are required to enroll on the above-mentioned e-Procurement Portal by clicking on the link "Online bidder Enrollment" on the Portal which is free of charge. In case of intended Joint Venture Lead partner shall enroll on the above-mentioned e-Procurement Portal. 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts. 3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the e-Procurement Portal. 4) Upon enrolment, the Bidders will be required to register their valid Digital Signature Certificate ("**DSC**") (Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify /nCode / eMudhra etc.), with their profile. 5) Only one valid DSC should be registered by a Bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.

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6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR BIDDING DOCUMENTS

1) There are various search options built in the e-Procurement Portal, to facilitate bidders to search active bids by several parameters. These parameters could include Bid ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for bids, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a bid published on the e-Procurement Portal.

2) Once the bidders have selected the bids they are interested in, they may download the required documents / bid schedules. These bids can be moved to the respective 'My Bids' folder. This would enable the e-Procurement Portal to intimate the bidders through SMS / e-mail in case there is any addendum/corrigendum issued to the Bidding Document.

3) The Bidder should make a note of the unique Bid ID assigned to each bid, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

1) Bidder should take into account any corrigendum/addendum published on the Bidding Document before deadline of submission of Bids.

2) Bidder should go through the IFB and the Bidding Document carefully to understand the documents required to be submitted as part of the bid. It may be noted that, the number of covers in which the Bidding Document have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

3) Bidder, in advance, should get ready the Bidding Document to be uploaded as indicated in the Bidding Document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bidding Document may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

4) To avoid the time and effort required in uploading the same set of standard documents which are required to be uploaded as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" or "Other Important Documents" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process. **Note:** ***My Documents space is only a repository given to the Bidders to ease the uploading process. If Bidder has uploaded his Documents in***

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My Documents space, this does not automatically ensure these Documents being part of Technical Bid.

SUBMISSION OF BIDS

1) Bidder should log into the web site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

2) The DSC used for uploading of the bid submission shall be of the person duly authorized through power of attorney (POA) by the Bidder.

3) The Bidder has to digitally sign and upload the required Bidding Document one by one as indicated in the Bidding Document.

4) Bid processing fee by e-Procurement Portal is NIL.

5) Bid Security: Bidder should submit the Bid Security as per the instructions specified under ITB 19 of the bidding document.

6) Bidders are requested to note that they should necessarily submit their Price Bids in the format provided and no other format is acceptable. If the Price Bid has been given as a standard BOQ format with the Bidding Document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BOQ file, open it and complete the unprotected cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the Bidder should save it and submit it online, without changing the file name. If the submitted BOQ file is found to be modified or altered or substituted the bid shall be treated as non-responsive and shall be rejected.

   (Note:- Financial Bid and Price Bid are synonymous wherever mentioned in the Bidding Document)

7) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

8) All the documents being uploaded by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128-bit encryption technology. Data storage encryption of sensitive fields is done. Any Bidding Document) that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys.

9) The uploaded Bidding Document) becomes readable only after the bid opening by the authorized bid openers.

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	10) Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details. 11) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings. **ASSISTANCE TO BIDDERS** 1) Any queries relating to the Bidding Document and the terms and conditions contained therein should be addressed to the Bid Inviting Authority for a bid or the relevant contact person indicated in the bid. 2) Any queries relating to the process of online bid submission or queries relating to e-Procurement Portal in general may be directed to the 24x7 e-Procurement Portal (CPP) Helpdesk. 3) For any Technical queries related to Operation of the Central Public Procurement Portal Contact at: Tel: The 24 x 7 Telephonic Help Desk Number 0120-4200462, 0120-4001002, 0120-4001005, 0120-6277787. E-Mail: cppp-nic[at]nic[dot]in, support-eproc[at]nic[dot]in
2. Source of Funds	2.1 The required funds have been sourced by the Employer, unless the funding agency is specified in the **BDS**, in such cases ITB 2.2 will be applicable.
	2.2 i) the Borrower or Recipient (hereinafter called "Borrower") indicated in the **BDS** has applied for or received financing (hereinafter called "funds") from the Funding Agency toward the cost of the project named in the **BDS**. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued. ii) payments by the Funding Agency will be made only at the request of the Borrower and upon approval by Funding Agency in accordance with the terms and conditions of the Financing Agreement between the Borrower and Funding Agency (hereinafter called "Financing Agreement"), and will be subject in all respects to the terms and conditions of that Financing Agreement. No party other than the Borrower shall derive any rights from the Financing Agreement or have any claim to the funds.
3. Fraud and Corruption	3.1 The Employer requires that bidders, contractors, sub-contractors and contractor's personnel observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this, the Employer: (a) defines, for the purposes of this provision, the terms set forth below as follows: (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;

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(ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

(iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

(iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;

(v) "abuse" means theft, waste or improper use of assets related to Employer-related activity, either committed intentionally or through reckless disregard;

(vi) "conflict of interest" means any situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations;

(vii) "obstructive practice" means (a) deliberately destroying, falsifying, altering or concealing of evidence material to an Employer's investigation, or deliberately making false statements to investigators, with the intent to impede an Employer's investigation; (b) threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to Employer- investigation or from pursuing the investigation; or (c) Employer reserves the right directly or through their Auditors to inspect accounts, records and other documents relating to the bid submission and contract performance pertaining to contractor, supplier, sub-contractor. Deliberate acts intended to impede the exercise of Employer's contractual rights of audit or inspection or access to information; and

(viii) "integrity violation" including (i) to (vii) above including failure to adhere to the highest ethical standard.

(b) has the right to reject the bid for award if it determines that the Bidder recommended for award or any of its personnel, or its agents and representatives have, directly or indirectly, engaged in corrupt, fraudulent, collusive, abusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;

(c) will sanction a bidder or its successor, including declaring ineligible, for a stated period of time, to participate in Employer's activities, if it at any time determines that the bidder has, directly or through an agent, engaged in corrupt, fraudulent, collusive, obstructive, abusive, conflict of interest, coercive and integrity violation in competing for, or in executing a contract of the employer.

(d) In case it is found during the evaluation or at any time before signing of the Contract or after its execution and during the period of subsistence thereof, that the Bidder has made material misrepresentation or has given any materially incorrect or false information, the Bidder may be

i) disqualified and banned for further business dealings for a period of upto Two (02) years with the Employer

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	forthwith if not yet appointed as the Bidder either by issue of Letter of Acceptance or entering into of the Contract. ii) And if the Bidder has already been issued the Letter of Acceptance or has entered into the Contract, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this Bidding Document, be banned for further business dealings with the Employer for a period of upto Two (02) years, by a communication in writing by the Employer to the bidder, without the Employer being liable in any manner whatsoever to the Bidder or the bidder, as the case may be. Further the Contract of the Bidder may be terminated and the decision of Employer in this regard shall be final and binding on the bidder. In case the Contract is terminated, Employer shall forfeit and appropriate the Performance Security (to be treated as mutually agreed pre-estimated compensation and damages payable to the Employer for, inter alia, time cost and efforts of the Employer), without prejudice to any other right or remedy that may be available to the Employer. iii) In case the Bidder is a JV, the above provisions shall be applicable on all the partners of the JV.
4. Eligible Bidders	4.1 A Bidder may be a natural person, private entity, or government-owned enterprise subject to ITB 4.5—or any combination of them (**"Joint Venture"** or **"Consortium"**) (as the case may be) Incorporation of Joint Venture is not mandatory. Throughout this bidding document, including under Section 1, Section 2, Section 3, and Section 4, the expressions "Joint Venture" or "JV" means a joint venture, association, consortium or other unincorporated grouping of two or more persons/Entities, whether in the form of a partnership or otherwise. Similarly, in the context of Joint Venture, throughout the bidding document, the word "leader", as stipulated under the General Conditions of Contract is synonymous with the word "Representative" and with the words "lead partner" and with "Lead Partner"; the word "member" is synonymous with the word "partner" and with "Partner"; and the word "members" is synonymous with "partners" and with "Partners". (a) In case of Single Entity (An entity that cannot be further differentiated into units with their own legal identities): i.) Submit Power of Attorney (As per Form ELI-4) authorizing the signatory of the bid to commit the bidder. ii.) Bidder shall also furnish Form ELI-1 and documents required therein with their technical submission. (b) In the case of a Joint Venture, i.) Lead Partner must have highest share participation in the Joint Venture and no Joint Venture partner shall have less than 26% participation in the JV., or as specified in **BDS**. In case of JV, change in constitution or percentage participation shall not be permitted at any stage after the bid submission otherwise the bidder shall be treated as non-responsive. ii.) all partners shall be jointly and severally liable; and iii.) the Joint Venture shall nominate a Representative who shall have the authority to conduct all business

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	for and on behalf of any and all the parties of the Joint Venture during the bidding process and, in the event the Joint Venture is awarded the Contract, during Contract execution. iv.) Submit Form ELI-2, ELI-3, ELI-4 and ELI-5 given in Section 4: Bidding Forms, with their technical bid submission. v.) Submit Power of Attorney by individual partners to the Lead Partner as per the form given in Section 4. vi.) In case a Joint Venture is the successful bidder, the detailed Joint Venture Agreement as per format stipulated in Section 9, Contract Forms shall be entered by the Joint Venture partners. vii.) The duly signed detailed Joint Venture Agreement shall be submitted to the Employer within 28 days of notification of award along with the Performance Security. (c) Non-Local Supplier as defined in Department for Promotion of Industry and Internal Trade (Public Procurement Section) Ministry of Commerce and Industry, vide their letter No. P-45021/2/2017-PP (BE-II) dt 16.09.2020 and available on their website are not eligible to participate in this Bid.
	4.2 a) The Bidder, and all parties constituting the Bidder (including Sub-Contractor if permitted), is/are registered by the Competent Authority, if required so, as per the restrictions under 144(xi) of the General Financial Rules (GFRs) as issued by Letter Number F.7/10/2021-PPD(1) dated 23.02.2023 of Procurement Policy Division, Department of Expenditure (DoE) under Ministry of Finance; Government of India or any subsequent amendment on the subject matter issued by Government of India till Deadline for Bid Submission. b) All the Bidders, irrespective of the Country of incorporation, will also have to certify that they are either not required to be registered OR are registered, if required to do so under 4.2 (a) (Refer Bidding Form UT – 2). c) In the event that the Contract is awarded to a foreign Bidder, such foreign Bidder shall be required to follow Applicable Laws in India as regards services by a foreign bidder. Foreign Bidder will be those Bidders whose country of Registration/Incorporation is other than INDIA.
	4.3 A Bidder shall not have a conflict of interest that affects the bidding process. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in the bidding process if any of, including but not limited to, the following apply: (a) they have controlling shareholders in common; or (b) they receive or have received any direct or indirect subsidy from any of them; or (c) they have the same legal representative for purposes of this bid; or (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence

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the bid of another bidder, or influence the decisions of the Employer regarding this bidding process; or

(e) Bidder participates in more than one bid in this bidding process, either individually or as a partner in a Joint Venture. A Bidder who participate in more than one Bid will cause all of 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 Joint Venture in the same Bidding process. However, subject to any finding of a conflict of interest in terms of ITB 4.3(a)-(d) above a bidder, if acting in the capacity of Sub Contractor in any Bid, may participate in more than one Bid, but only in that capacity.

(f) a Bidder or any of its constituents, Joint Venture partner, associates, parent company, or any affiliated entity, participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or

(g) a Bidder was affiliated for any period(s) during last two years before the date of issue of Invitation for Bids with a firm or entity that has been hired (or is proposed to be hired) to work as Engineer for the subject contract; or

(h) Conflict between consulting activities and procurement of goods, works or non-consulting services (i.e., services other than Consulting Services): such Bidder that has been engaged by the Employer to provide goods, works, or non-consulting services for a project, or any of its affiliates that directly or indirectly Controls, is Controlled by, or is under common Control with such Bidder, shall be disqualified from providing consulting services resulting from or directly related to those goods, works, or non-consulting services. Conversely, such Bidder hired to provide consulting services for the preparation or implementation of the Project, or any of its affiliates that directly or indirectly Controls, is Controlled by, or is under common Control with such Bidder, shall be disqualified from subsequently providing goods or works or non-consulting services (other than Consulting Services) resulting from or directly related to the Consulting Services for such preparation or implementation. This provision does not apply to the various firms (consultants, contractors or suppliers) which together are performing the Contractor's obligations under a turnkey or design and build contract.

(i) Conflict among consulting assignments: Neither consultant (including their personnel and sub-consultants), nor any affiliate that directly or indirectly Controls, is Controlled by, or is under common Control with that firm, shall be hired for any assignment that, by its nature, may be in conflict with another assignment of the consultant.

(j) In the case of the consultant or any entity affiliated with the consultant, is already part of providing any services for the Project for the Employer, the consultant shall ensure that the Proof Checking for those services shall be carried out by an independent third party from an empaneled list (of at least three firms) as decided by the Employer. The cost shall be deemed to be included in the quoted cost. (e.g. a firm working as a detailed design consultant for NCRTC, if selected as a general consultant shall have to get the proof checking of detailed design from a third party from the

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	empaneled list at their own cost. In such cases, the corresponding key experts shall be deployed from the third party selected for the proof checking) (k) Relationship with Employer's Staff: Consultant (including their experts and other personnel, and sub-consultants) that have a close business or family relationship with a professional staff of the Employer (or of the Project implementing agency) who are directly or indirectly involved in any part of: (i) the preparation of the Scope of Work/Terms of Reference, (ii) the selection process for the Contract, or (iii) the supervision of such Contract may not be awarded the Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to the Employer throughout the selection process and the execution of the Contract.
	4.4 The Bidder shall be disqualified if: (a) The Bidder or any of its constituents and/or sub-contractor /sub-consultant included in the bid have been blacklisted/banned for business dealings with Ministry of Housing and Urban Affairs (MoHUA) or by any of its attached or subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance issuing banning of business applicable over all departments with the banning being valid as on the last date of deadline for submission of bids, except in cases where such blacklisting/banning has been withdrawn by Competent Authority or has ceased on the deadline for submission of the bids, for which satisfactory evidence is to be produced. (b) The Partner(s) of an existing Joint Venture which has been blacklisted/banned by Ministry of Housing and Urban Affairs (MoHUA) along with any of its attached and subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance, shall be allowed to participate in the future Bids of the Employer, if that Partner(s) proves its eligibility with documentary evidence of not having been blacklisted/banned in individual capacity for bidding in other organizations. (c) Any previous contract of the Bidder or of any of its constituents had been terminated for contractor's failure by MoHUA along with any of its attached and subordinate offices or by any metro rail organizations in India at any time starting from 02 years before the deadline for submission of bids. Provided, however, there is no stay order or declaration by any Court against such termination of the Contract or such termination of the Contract has not been revoked. (d) The Bidder or any of its constituents has suffered bankruptcy/insolvency or it is in the process of winding-up or there is a case of insolvency pending before any Court on the deadline of submission of bids or thereafter till finalization of bids. (e) The Bidder is found ineligible by the Employer, in accordance with ITB-3. (f) The Bidder or its constituent(s) has been declared by MoHUA along with any of its attached and subordinate

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	offices or by any metro rail organizations in India to be a poor performer and the period of poor performance is still in force on the deadline for submission of bids. The Bidder shall submit an Affidavit stating that they are not disqualified as per this sub clause (using the Performa given in Section 4) in the Bid submission.
	4.5 Government-owned enterprises in the Employer's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under commercial law, and (iii) are not a dependent agency of the Employer.
	4.6 A Bidder shall not be under suspension from bidding by the Employer as the result of the execution of a Bid–Securing Declaration. 4.7 Bidders shall immediately inform the Employer, in case Bidder ceased to fulfill eligibility or Employer requests to provide evidence for their continued eligibility in terms of ITB 4. In case the Bidder fails to inform the Employer or submits a false affidavit, the Employer has the right to reject the bid and Bidder shall also be liable for Banning of Business dealings by the Employer for a period of upto 02 (two) years.
5. Eligible Materials, Equipment and Services	5.1 At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services. The materials, equipment and services to be supplied under the Contract shall have their origin from countries as defined in ITB 4.2.
	5.2 For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced, or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.
B. Contents of Bidding Document	
6. Sections of Bidding Document	6.1 The Bidding Document consist of Parts I, II, and III, which include all the sections indicated below, and should be read in conjunction with any addenda/corrigenda issued in accordance with ITB 8. **PART I Bidding Procedures** Invitation for Bids (IFB) Section 1 - Instructions to Bidders (ITB) Section 2 - Bid Data Sheet (BDS) Section 3 - Evaluation and Qualification Criteria (EQC) Section 4 - Bidding Forms (BF) Section 5 - Nationality **PART II Requirements** Section 6 A: Employer's Requirement/ Scope of Work Section 6 B: Technical Specification Section 6 C: SHE Conditions of Contract Section 6 D: Reference Documents (Bid drawings etc.) **PART III Conditions of Contract and Contract Forms** Section 7 - General Conditions of Contract (GCC) Section 8 - Part A: Appendix to Bid

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	Section 8 - Part B: Particular Conditions of Contract (PCC) Section 9 - Contract Forms (CF) **FINANCIAL BID / PRICE BID IN EXCEL FORMAT**
	6.2 The IFB issued by the Employer is a part of the Bidding Document.
	6.3 The Employer is not responsible for the completeness of the Bidding Document and their addenda/corrigenda, if they were not obtained directly from the source stated by the Employer in the IFB. The complete Bidding Document can be viewed / downloaded by the Bidder from e-Procurement Portal of NIC https://etenders.gov.in/eprocure/app or can be viewed at official website of NCRTC www.ncrtc.in as mentioned in critical date in the IFB.
	6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.
7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting	7.1 A Bidder requiring any clarification on the Bidding Document shall contact the Employer through e-Procurement Portal of NIC https://etenders.gov.in/eprocure/app or through authorized e-mail id of Employer or raise its inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The deadline for seeking clarification by the Bidder shall not be later than 14 days (up to 17:00 Hrs. IST) prior to the deadline for submission of bids. The Employer will respond to any request for clarification at least 07 days prior to the deadline for submission of bids through e-Procurement Portal or through authorized e-mail id of Employer. The Employer may, if necessary, amend the Bidding Document as a result of a request for clarification, then it shall do so following the procedure under ITB 8 and ITB 22.2.
	7.2 The Bidder is advised to submit its bid after visiting and examining the Site of Works and its surroundings and obtaining for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a Contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
	7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
	7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the **IFB**. The purpose of the meeting will be to clarify issues pertaining to the Bid.
	7.5 The Bidder is requested to upload the Pre-Bid queries on the e-Procurement Portal or send in authorized e-mail id of Employer not later than the date and time as mentioned in

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		ITB 7.1 as per the standard proforma provided in Section-4 of the Bidding Document (Form-PQ of Bidding Forms).
	7.6	The text of the questions raised, (including questions raised during the meeting in writing) without identifying the source, and the responses given, together with any responses prepared after the meeting will be uploaded on e-Procurement Portal, https://etenders.gov.in/eprocure/app. Any modification to the Bidding Document that may in the sole discretion of the Employer become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the use of an Addendum/Corrigendum pursuant to ITB 8 and ITB 22.2.
	7.7	Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.
8. Amendment of Bidding Document	8.1	At any time prior to the deadline for submission of Bids, the Employer may amend the Bidding Document by issuing addenda/corrigenda.
	8.2	Any addendum/corrigendum issued shall be part of the Bidding Document and shall be uploaded on e-Procurement Portal https://etenders.gov.in/eprocure/app. The onus is on the Bidders to visit the e-Procurement Portal to see the addenda/corrigenda published by the Employer.
	8.3	To give prospective Bidders reasonable time in which to take an addendum/corrigendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 22.2
C. Preparation of Bids		
9. Cost of Bidding	9.1	The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
10. Language of Bid	10.1	The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in English language. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation by an authorized translator of the relevant passages in English language. The translated document such as Power of Attorney, supporting documents of Bidder's information (i.e. Certificate of Incorporation, Memorandum of Association, Article of Association, Board Resolutions), documents submitted pertaining to Evaluation and Qualification Criteria (i.e. Experience Certificates, Financial Statements etc.) shall also be attested by Embassy of India in the Bidder's country.
11. Documents Comprising the Bid	11.1	The Bidder shall submit their bid on-line on e-Procurement Portal https://etenders.gov.in/eprocure/app as mentioned in para ITB 21. The Bid shall comprise two parts submitted simultaneously, one called the Technical Bid containing the documents listed in ITB 11.2 and the other the Price Bid containing the documents listed in ITB 11.3.

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	11.2 The Technical Bid shall comprise the following: (a) Letter of Technical Bid; (b) alternative Bids, if permissible, in accordance with ITB 13; (c) Technical Proposal in accordance with ITB 16; (d) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract; (e) Bid-Security in accordance with ITB 19 and ITB 21; (f) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2; (g) Details of MSEs/Startup Business/ Make in India in accordance with ITB 36 (h) duly filled bidding forms along with relevant document as mentioned in Section-4: Bidding Forms (i) Any other document required in the **BDS**.
	11.3 The Price Bid in Excel format shall comprise the following: (a) Letter of Price Bid; (b) alternative price Bids, at Bidder's option and if permissible, in accordance with ITB 13; (c) completed Price Schedules, in accordance with ITB 12 and ITB 14; (d) Any other document required in the **BDS**.
	11.4 In addition to the requirements under ITB 11.2, Bids submitted by a Joint Venture shall include a copy of the Joint Venture Agreement (In case of existing Joint Venture) / Intended Joint Venture Agreement as per Form ELI-3 of Bidding Form.
12. Letters of Bid and Schedules	12.1 The Letters of Technical Bid and Price Bid, and the Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section 4 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. Bid, if found with modification or alteration or substitution it may be considered as non-responsive and Employer reserves the right to reject the Bid. All blank spaces shall be filled in with the information requested.
13. Alternative Bids	13.1 Unless otherwise indicated in the **BDS**, alternative Bids shall not be considered.
	13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the **BDS**, as will the method of evaluating different times for completion.
	13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.
	13.4 When specified in the **BDS**, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified in the **BDS** and described in Section 6 (Employer's Requirements). The method for their

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	evaluation will be stipulated in Section 3 (Evaluation and Qualification Criteria).
14. Bid Prices and Discounts	14.1 The prices and discounts quoted by the Bidder in the Letter of Price Bid and in the Bill of Quantities shall conform to the requirements specified below.
	14.2 The Bidder shall quote the prices of the works in accordance with the instructions mentioned in **BDS** out of the following; a) The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities and shall be evaluated accordingly. OR b) In the Bill of Quantities (BOQ), unit, quantity and unit rates and thereby the amount against each item have been indicated. From this Percentage BOQ, price of each schedule has been worked out and indicated in the summary sheet in BOQ. The Bidder shall quote rates as single percentage above/below/at par in figures for each schedule as per format in the 'Percentage BOQ'. Failure to quote the "% excess" or "% less" or "at par" in any schedules shall be treated as "at par" irrespective of any figure in percentage (if indicated) and shall be evaluated accordingly. OR c) In the Bill of Quantities (BOQ), unit, quantity and unit rates and thereby the amount against each item have been indicated. From this Percentage BOQ, price of each schedule has been worked out and indicated in the summary sheet in BOQ. The Bidder shall quote rates as single percentage above/below/at par in figures on total amount of all Schedules as per format in the 'Percentage BOQ'. Failure to quote the "% excess" or "% less" or "at par" for the total amount of schedules shall be treated as "at par" irrespective of any figure in percentage (if indicated) and shall be evaluated accordingly. OR d) The Bidder shall quote lumpsum price for the work as mentioned in the Bill of Quantity. In case Bidder fails to quote the lumpsum amount in the Price Bid for lumpsum schedules, in such case the offer of the Bidder shall be considered non-responsive and it shall be summarily rejected. OR e) Any combinations of (a), (b), (c) and (d) as mentioned above.
	14.3 The price quoted in the Letter of Price Bid, in accordance with ITB 12.1, shall be the total price of the Bid. Any additional/other discount if offered by the Bidder shall be mentioned separately in the Letter of Price Bid. Net offered Price Bid shall be considered after deduction of proposed discounts from total Price of Bid. In case of, absence of the total bid price/Net Bid Price in the Letter of Price Bid, bid may be considered as non-responsive and Employer may reserve the right to reject the bid.
	14.4 The Bidder shall quote any unconditional discounts in terms of percentage figure either on total bid price or against individual schedule price so that the discounts can be evaluated by simple arithmetic calculation during financial

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	evaluation of the bids, to arrive at the net total price of the bid. The Bidder shall quote any discounts and the methodology for their application in the Letter of Price Bid, in accordance with ITB 12.1 If the net total price cannot be calculated after application of the methodology of the discount(s) quoted, the bid shall be considered without discount and shall be evaluated accordingly. In case of multiple lots, any discount offered for award of any specific combination of Contract lots(s) has to be quoted separately for each specific combination and to be submitted in Price Bid.
	14.5 Unless otherwise provided in the **BDS** and the Contract, the rates and prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract. (a) In the case of Fixed Price Bid, prices quoted by the Bidder shall be fixed during the currency of the Contract and not subject to variation on any account. A Bid submitted with an adjustable price may be treated as nonresponsive and Employer reserves the right to reject the Bid. (b) In the case of Adjustable Price, prices quoted by the Bidder shall be subject to adjustment during currency of the Contract to reflect changes in the cost elements such as labor, material, transport, and contractor's equipment in accordance with the provisions of the Conditions of Contract. A Conditional Bid submitted with a fixed price may be treated as nonresponsive and Employer reserves the right to reject the Bid. The indices and weightings shall be taken for this purpose as provided in the sub-clause Adjustments for Changes in Cost as per General Conditions of Contract.
	14.6 If so, indicated in ITB 1.1, bids are being invited for individual contracts or for any combination of contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.4, provided the Bids for all contracts are submitted and opened at the same time.
	14.7 i. All duties, taxes, and other levies etc. payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder. The total Bid Price, inclusive or exclusive of GST and/or Custom duties, shall be in accordance with the details mentioned in **BDS**. ii. If custom duty is exempted in the project as specified in the **BDS**, then following provisions shall be applicable: a) The Goods/Plants/ Services/Works (as defined under General Conditions of Contract) imported for the project execution are exempt from whole of the duty of customs leviable thereon under first Schedule to the Customs tariff Act 1975 (51 of 1975) and the whole of the special duty of customs leviable under section 68 of the Finance (No. 2) Act 1996 as per the provision of the Notification No. 84/97 dated 11th Nov 1997, as amended time to

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time. **(Copy of Notification attached in PCC for ready reference)**.

b) Employer will facilitate the Contractor with necessary certificate in this regard. The responsibility to avail the exemption of Custom Duty shall solely rest with the Contractor. The Contractor shall also be solely responsible for custom clearing of the Goods/Plants/ Services/Works (as defined under General Conditions of Contract). Importer on Record can be NCRTC or domestic Bidder or domestic Joint Venture partner(s). The Contractor shall maintain records of the Goods/Plants/ Services/Works (as defined under General Conditions of Contract) imported for the project execution and actual utilization of the same for the project execution. The Contractor shall be fully responsible for any loss or misuse of these imported Goods/Plants/ Services/Works (as defined under General Conditions of Contract).

c) In case Deemed Export Benefits under Foreign Trade Policy is available, Contractor shall take advantage and consider this in the bid price. Employer shall facilitate the Contractor with reasonable documents for availing the Deemed Export Benefits. However, the responsibility to avail the Deemed Export Benefits or otherwise as extended in accordance with the law of the land shall solely rest with the Contractor.

iii. GST shall be paid as applicable in accordance with the prevailing rules of Government of India on submission of GST invoices as per the prevailing Government rules. Goods and Service Tax [GST] will be paid extra as applicable on the submission of GST Invoices for first Interim payment certificate. The subsequent Interim payment certificate shall be processed for payment upon submission of documentary evidence in the form of Challans/GSTR Form-1 as the case maybe towards payment of GST collected on the previous Interim payment certificates to the GST Authorities. In case proof of GST deposited to authorities is not submitted with IPC, the same will be processed after withholding the GST amount (which was paid on previous IPC to contractor). The same withhold amount will be released only after the submission of documentary evidence (as stated above) to employer. However, if subsequent bills are raised before the return submission date of previous Bill period, the documentary evidence towards payment of GST shall be provided within 7 days from the date of such return filling. The Final payment certificate/single payment certificate, payment shall be released on the undertaking by the contractor/supplier for providing evidence within 07 days from the due date of such return filing for final bill based on GST provision for due dates.

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15. Currencies of Bid and Payment	15.1 Bidder shall quote their offer only in INR in the Price Bid unless specified in the **BDS**.
	15.2 Unless specified in the **BDS**, bidders expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country and wishing to be paid accordingly may indicate the other currencies schedule wise in the Schedule of Payment Currencies (in maximum three freely convertible foreign currencies in addition to local currency i.e. INR) included in the Price Bid.
	15.3 Bidders may be required by the Employer to clarify their foreign currency requirements are reasonable in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder to substantiate the amounts included in the unit rates and prices shown in the Schedule of Payment Currencies. If the Employer considers that the requirement of foreign currencies are not reasonable, then Employer reserves the right to consider the Bid as non-responsive.
	15.4 A. For evaluation purpose; (i) For Section 3: Evaluation and Qualification Criteria (EQC) purpose, the currency other than INR to be converted to INR shall be as per Notes of Section 3: Evaluation and Qualification Criteria. (ii) For the purpose of Price Bid comparison foreign currency part shall be converted to Equivalent INR by adopting exchange rate 28 days prior to the latest deadline for submission of Bids. (iii) The exchange rate shall be as per the website of RBI. In case the reference rate of particular currency on a given date is not available on the website of RBI, it will be taken as per the website of Financial Benchmark India Private Limited (FBIL) as specified in the website of RBI. In case the exchange rate of the particular currency is not available on any date in both the websites as mentioned above, then the selling exchange rate as per the website of the Central Bank of that country to which the currency belongs will be taken to convert that currency to INR. In case the exchange rate of that currency is not directly available in INR then the currency will be first converted to USD and then re-converted to INR as per para above. (iv) Bidder in its Bid shall indicate the source used with documentary evidence for conversion and conversion rates used for converting foreign currency into INR. B. For payment purpose; (i) The Advance Payment/Interim Payment Certificate (IPC)/ Final Payment Certificate (FPC) (without Price Variation adjustment) payment shall be claimed in INR and the invoice shall be submitted in the currencies as per the proportion stipulated in Schedule of Payment Currencies (Section 4, Bidding Forms) by using the reference rate of the conversion of 28 days prior to the last deadline of submission as specified in para A(i) & (ii) above. (ii) Adjustment on account of Price Variation shall be calculated separately in INR, for each period, between

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	two successive dates of measurements for bills and paid along with each bill or separately as claimed by the contractor. Payment against the price variation shall be made to the contractor in accordance with the proportion stipulated in Schedule of Payment Currencies (Section 4, Bidding Forms) by using the reference rate of the conversion on the last day of the period to which a particular interim payment certificate is related as per the methodology specified in para A(i) & (ii) above.
	15.5 Foreign currency requirements generally include the following; (a) expatriate staff and labor employed directly on the Works; (b) social, insurance, medical and other charges relating to such expatriate staff and labor, and foreign travel expenses; (c) imported materials, both temporary and permanent, including fuels, oil and lubricants required for the Works; (d) depreciation and usage of imported Plant and Contractor's Equipment, including spare parts, required for the Works; (e) foreign insurance and freight charges for imported materials, Plant and Contractor's Equipment, including spare parts; and (f) overhead expenses, fees, profit, and financial charges arising outside the Employer's country in connection with the Works.
	15.6 Payment shall be made electronically in the account of the Contractor as per the details provided by the Contractor. (i) In case the Contractor is an incorporated Joint Venture, the payment shall be made only in the name of Joint Venture. (ii) In case the Contractor is an un-incorporated JV, if requested by the contractor, direct payment to the individual partners/ Lead Partner, if so authorized, of the Joint Venture can be made on joint certification by the authorized representatives of individual constituent partners, after making requisite recoveries /deduction from the gross payment. In this case, a notarized detailed Joint Venture Agreement (Section 9: CF) jointly signed by authorized representatives of all the constituent partners of the Joint Venture Joint Venture to this effect need to be submitted to the Employer before commencement of the Work. For Tax purpose, Joint Venture or Individual partners of Joint Venture, as the case may be, shall be required to submit individual Tax invoices. All payments, will be subject to deduction of tax at source in accordance with the provisions of the Indian Income tax Act, Indian Goods & Services Tax laws and any other applicable laws, including any Withholding Taxes (as per applicable provisions/Lower Tax deduction certificate issued by Tax Authorities) etc. Building & Others Construction Workers (BOCW) Cess shall be applicable on Contract Price (excluding GST). The Contractor / individual partners of Joint Venture shall take necessary clearance/exemption and registration certificate for Income Tax/GST/Other Taxes, as applicable.
16. Documents Comprising the	16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule, and any other information as stipulated in Section 4 (Bidding

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Technical Proposal	Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.
17. Documents Establishing the Qualifications of the Bidder	17.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).
	17.2 In case Domestic Preference is applicable as specified in **BDS**, Domestic Bidders, individually or in Joint Ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 36.
18. Period of Validity of Bids	18.1 Bids shall remain valid for the period specified in the **BDS** after the bid submission deadline date prescribed by the Employer. In case of Bid Validity is of shorter period than the Employer has the right to reject the Bid as non-responsive.
	18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended upto the date mentioned in the letter of request for extension. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid.
19. Bid Security	19.1 The Bidder shall furnish as part of its bid, a bid security in stipulated form with requisite validity and for the said amount of Currency as specified in clause 1.2 (a) of IFB (Bid Schedule/Details). a. Bidders are required to upload the duly signed scanned copy of the Bid Security in the E-Procurement portal of NIC (CPP Portal) with the offer on e-procurement portal. However, Original of the same Bid Security which was submitted with the offer on e-Procurement Portal of NIC should also be submitted by the Bidders at the Employer's address indicated in the **BDS**/IFB before the date and time specified in ITB 22.1. The Original Bid security received in physical form should be the original Bid Security instrument of the scanned copy uploaded in the e-bidding portal of NIC along with the Bid and no deviation whatsoever shall be accepted in this regard. b. The bidder shall be considered as non-responsive in case original Bid Security (in physical form) which was uploaded with the bid on e-bidding Portal, is not submitted to NCRTC before the date and time specified in ITB 22.1. 19.2 The bid security shall be, at the Bidder's option, in any of the following forms: (a) A Cashiers or Banker's certified cheque or Bank draft drawn on a Scheduled Commercial Bank in India in favour of "National Capital Region Transport Corporation Ltd." payable at New Delhi; or

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(b) An unconditional bank guarantee (BG) using the Form given in Section 4: Bidding Forms. The bank guarantee shall be from a bank having minimum net worth of over INR 5000 million from the specified banks as under:

(i) a Scheduled Commercial Bank in India, or

(ii) a Foreign Bank which do not have operations in India is required to provide a counter-guarantee by a Scheduled Commercial Bank in India, or a Foreign Bank which has a correspondent bank in India is required to submit the Bank Guarantee through the correspondent bank in India,

(c) The Scheduled Commercial Bank issuing the Bank Guarantee preferably on **"Structure Financial Messaging System (SFMS)" platform**. In case if Bank Guarantee is issued on SFMS platform then a separate advice of the BG shall invariable be sent by the issuing bank to the Employer's Bank through SFMS.

Further, the Bid Security in Original form along with a copy of "MT760COV/IFN760 (in case of issue of Original Bank Guarantee message) / MT767COV/IFN767 (in case of Bank Guarantee amendment message) Report" sent by the BG issuing Bank Sealed in an envelope shall be submitted as stated in clause 1.2 (a) of IFB.

The Issuing Bank shall send the SFMS to:

Beneficiary: National Capital Region Transport Corporation Limited
Bank Name: HDFC Bank
Account No. 50200029737870
IFSC Code: HDFC0000003

(d) Fixed Deposit Receipt (FDR) of a Scheduled Commercial bank/ Post office based in India duly pledged in favour of "National Capital Region Transport Corporation Ltd."

The validity / Maturity date of the bid security shall be as per the date mentioned in IFB under clause 1.2 (a) (Bid Schedule/Details), or up to the date mentioned in the letter of request for extension, if any under ITB 18.2.

19.3 Any bid not accompanied by an enforceable and compliant bid security, as required in accordance with ITB 19.1, the Employer has the right to reject such bid.

19.4 The bid security of unsuccessful Bidders during first stage i.e. technical evaluation etc. should be returned within 30 days of declaration of result of first stage i.e. technical evaluation. Bid security of the technically qualified bidders other than successful bidder should be returned to them within 30 days of award of the work to successful bidder.

19.5 The bid security of the successful Bidder should be returned after receipt and confirmation of the Performance security and signing of the Contract Agreement by successful bidder.

19.6 The bid security shall be forfeited:

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bids

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	(b) if a Bidder misrepresents or omits the facts in order to influence the procurement process; (c) if the successful Bidder fails to: (i) sign the Contract in accordance with ITB 45; (ii) furnish a performance security in accordance with ITB 44; (iii) accept the correction of its Bid Price pursuant to ITB 34.2; or (iv) furnish a domestic preference security if so required. (d) if the affidavit submitted by the bidder or its constituents in pursuance to ITB clause 4.4 or any of the declarations of Letter of Technical Bid submitted by the bidder has been found to be false at any stage during the process of bid evaluation. (e) In case the bidder who has been exempted for submission of Bid Security being Startup Business, and; (i) withdraws his Bid during the period of Bid validity; or (ii) becomes the successful bidder, but fails to commence the work (for whatsoever reasons) as per terms & conditions of bid; or (iii) refuses or neglects to execute the contract; or (iv) fails to furnish the required Performance Security within the specified time, Then such bidders shall be debarred from participating in future bids for a period of upto **02 year** from the date of discharge of bid / date of cancellation of LOA / 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 Bid Cost / Bid Security. (f) 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. 19.7 In case the bid security is submitted in the form of Bank Guarantee/FDR, the same shall be subject to verification for its genuineness by the Employer. 19.8 If the bid security is required as per ITB 19.1, the bid security of a Joint Venture shall be in the name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of bidding, the bid security shall be in the name of any or all of the Joint Venture partners. 19.9 In case the Bank Guarantee/FDR is submitted in the name of any partner of the JV, then the bidder shall also submit undertaking as per Form UT-5.
20. Format and Signing of Bid	20.1 The Technical Bid (comprising of documents specified in ITB 11.2) and Price Bid (comprising of documents specified in ITB 11.3) shall be submitted online on e-Procurement Portal of NIC https://etenders.gov.in/eprocure/app only in accordance with the requirements of the Bidding Document.
	20.2 Bidding Documents which are to be submitted as scanned documents shall be printed or written in indelible ink (in the case of copies, legible photocopies are also acceptable) and all the pages shall be signed by person or persons duly

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	authorized to sign on behalf of the Bidder before scanning and uploading (in PDF / XLS / RAR / DWF/JPG formats). Bidding Document may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document. Bidders are advised to ensure clarity and visibility of the contents of scanned documents before uploading the same. All pages of the Bid, where, entries or amendments have been made, shall be initialed by the person or persons signing the Bid. This authorization shall consist of a written confirmation as specified below and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. If a Bidder submits a deficient authorization, the Bid shall not be rejected in the first instance. The Employer shall request the Bidder to submit an acceptable authorization within 14 (fourteen) days. Failure to provide an acceptable authorization within the specified period the Employer reserves the right to reject the Bid. The written confirmation of authorization to sign on behalf of the Bidder shall consist of: a. In case of Private/Public Companies, a Power of Attorney (POA) from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution, Memorandum of Association and Article of Association shall also be submitted. b. In case of proprietorship bidders, Power of Attorney and Affidavit by the Proprietors. c. In case of partnership bidders, Power of Attorney and notarized/registered Partnership deed duly signed by all the partners. d. In case of Limited Liability partnership (LLP), a POA from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution shall also be submitted, where applicable. e. In case of Joint Venture, Power of Attorney duly signed by individual partners to the Lead partner as per the form given in Section-4 with stipulated documents.
	20.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.
D. Submission and Opening of Bids	
21. Submission of Bids	21.1 Bidders shall upload their bid submission online in accordance with ITB 1.4 on e-Procurement Portal https://etenders.gov.in/eprocure/app within the stipulated date and time as mentioned in ITB 22.1. The Bidder shall ensure that they retain a copy of the receipt/acknowledgement of their Bid submission which is generated by the system upon successful submission of Bid online.

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	21.2 Bids sent through any other means of transmission except as mentioned above shall be treated as invalid and shall stand rejected. 21.3 **No details about price bid shall be submitted / disclosed directly or indirectly in the technical bid and in such case, the Bid shall be rejected.** 21.4 Bidders are required to upload the duly signed scanned copy of the Bid Security /Relevant details of MSEs / Startup Registration in the E-Procurement portal of NIC (CPP Portal) with the offer on e-procurement portal. However, Original of the same Bid Security which was submitted with the offer on e-Procurement Portal of NIC should also be submitted by the Bidders at the Employer's address indicated in the **BDS**/IFB before the date and time specified in IFB. The Original Bid security received in physical form should be the original Bid Security instrument of the scanned copy uploaded in the e-bidding portal of NIC along with the Bid and no deviation whatsoever shall be accepted in this regard. The **bid** shall be considered as non-responsive in case of non-**submission** of copy of Startup Registration (in case exemption for Bid Security is claimed by the Bidder for being startup) in the e-bidding Portal along with submission of bid. The bidder shall also be considered as non-responsive in case original Bid Security which was uploaded with the bid on e-bidding Portal, is not submitted to NCRTC before the date and time specified in ITB 22.1. 21.5 The bidder shall seal the "Original Bid Security" in an envelope. The envelope shall: a. bear the name and address of the Bidder; b. the address of the Authority as mentioned in IFB Clause no. 1.2 (a); and c. bear the specific identification i.e. **Original Bid Security** for Bid No. and Name of Work of this bid as indicated in IFB d. contains the duly signed covering Letter of Bidder through which the Original Bid Security is submitted. The envelope containing the Original Bid Security shall not contain the Price Bid /Financial Bid of the Bidder. If the envelope is found containing Price Bid/ Financial Bid (in complete/ partial form) either signed or unsigned, then in such case, the Bid of the Bidder shall be considered as non-responsive and rejected. 21.6 Original Bid Security in physical form submitted after due date and time shall not be accepted and online bids of such bidders shall be rejected. NCRTC shall not be responsible for delay, loss or non-receipt of 'Original Bid Security' sent by post / courier. 21.7 NCRTC shall not be responsible for "Original Bid Security" delivered to any other place / person in NCRTC other than the designated authority.
22. Deadline for Submission of Bids	22.1 Bids must be submitted no later than the date and time through e-Procurement Portal as specified in the IFB.

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	22.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
23. Late Bids	23.1 Submission of Bids shall be closed on e-Procurement Portal at the date & time of submission as prescribed in ITB 22.1 after which no bid can be uploaded. Any bid received (complete or in parts) after deadline of Bid submission by any other means shall not be considered and bids or any other document associated with the Bid submitted on e-Procurement Portal before deadline of Bid submission shall only be evaluated.
24. Withdrawal, Substitution, and Modification of Bids	24.1 The Bidder may modify, substitute or withdraw its Bid after submission prior to the Bid Submission Deadline. No bid shall be modified, substituted or withdrawn by the Bidder on or after the Bid Submission Deadline and Time. For modification of Bid, bidder has to detach its old Bid from e-Procurement Portal (https://etenders.gov.in/eprocure/app) and upload / resubmit modified bid. For withdrawal of bid, Bidder has to click on withdrawal icon at e-Procurement Portal and can withdraw its Bid. Before withdrawal of a bid, it may specifically be noted that after withdrawal of a bid for any reason, Bidder cannot re-submit Bid again.
	24.2 Any documents submitted by the bidder who withdraw the bid in accordance with ITB 24.1 shall not be opened.
	24.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid or any extension thereof.
25. Bid Opening	25.1 The Employer shall conduct the electronic opening of Technical Bids on e-Procurement Portal as per the schedule date and time. The opening of the Technical Bids and subsequent details can be viewed by the bidders by logging on the e-Procurement Portal.
	25.2 The Price Bid submitted online on e-Procurement Portal will remain unopened in the e-Procurement Portal until the date and time of opening of Price Bid. The date and time of the opening of the Price Bid will be notified to all the bidders on e-Procurement Portal whose bid is found to be substantially responsive and technically qualified.
	25.3 The Technical Bids shall be opened one at a time, and the following shall be recorded: a) the name of the Bidder; b) Relevant details of Bid Security/Startup registration certificate, as applicable, and c) any other details as the Employer may consider appropriate. Only e-procurement Bids recorded at bid opening shall be considered for evaluation. No Bid shall be rejected at the opening of Technical Bids.
	25.4 After the evaluation of the Technical Bids, the Employer shall conduct the electronic opening of Price Bids of the bidders who have submitted substantially responsive Technical Bids and are qualified on the basis of evaluation of the Technical

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	Bids. The date and time of the opening of Price Bids will be published through e-Procurement Portal.
	25.5 The Employer will also publish on the e-Procurement Portal, the names of bidders whose bid have not been found substantially responsive to the requirements of the Bidding Document as a result of evaluation of Technical Bid. The Price bids of such technically non-responsive bidders shall not be opened.
	25.6 The Employer shall conduct the electronic opening of Price Bids on e-Procurement Portal. The opening of the Price Bids and subsequent details can be viewed by the bidders by logging on the e-Procurement Portal.
	25.7 On Opening of the Price Bids, Summary of Price Bid Opening and amount quoted by the bidders shall be informed through e-mail to all the Bidders who are found technically qualified.
E. Evaluation and Comparison of Bids	
26. Confidentiality	26.1 Information relating to the examination, evaluation, comparison, and post qualification of Bids and recommendation of Contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process.
	26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.
	26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.
27. Clarification of Bids	27.1 To assist in the examination, evaluation and comparison of the Bids, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing and delivered to concerned bidders through e-Procurement Portal or through e-mail id mentioned in the Bidding Document. The due date and time to response these queries will also be communicated. No change in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of errors discovered by the Employer in the evaluation of the Price Bids, in accordance with ITB 14.2 and ITB 34.1.
	27.2 The Bidder shall respond to the queries on e-Procurement Portal or on the email id mentioned in the Bidding Document. If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's requests for clarification, their bid shall be evaluated as per the available information in the submitted bid and bid may be rejected.
28. Deviations, Reservations, and Omissions	28.1 During the evaluation of Bids, the following definitions apply: (a) "Deviation" is a departure from the requirements specified in the Bidding Document;

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	(b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.
29. Examination of Technical Bids	29.1 The Employer shall examine the Technical Bid to confirm that all documents and technical documentation requested in ITB 11.2 have been provided, and to determine the completeness of each document submitted.
	29.2 The Employer shall confirm that the following documents and information have been provided in the Technical Bid. If any of these documents or information is missing, the offer may be rejected. (a) Letter of Technical Bid; (b) written confirmation of authorization to commit the Bidder; (c) Bid Security; (d) Technical Proposal in accordance with ITB 16.
30. Responsiveness of Technical Bid	30.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.
	30.2 A substantially responsive Technical Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that, (a) if accepted, would: (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
	30.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section 6 (Employer's Requirements) have been met without any material deviation, reservation, or omission.
	30.4 If a Bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and shall not subsequently be made responsive by correction of the material deviation, reservation, or omission.
31. Nonmaterial Nonconformities	31.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid that do not constitute a material deviation, reservation, or omission.
	31.2 Provided that a Technical Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

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	31.3 Provided that a Technical Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The cost of all quantifiable non material non conformities shall be evaluated by Employer and will make its own assessment of the cost of any nonmaterial nonconformities and omissions for the purpose of comparison of Bids and shall be advised to technically qualified and substantially responsive Bidders before opening of Price Bid.
32. Qualification of the Bidder	32.1 The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders meet the qualifying criteria specified in Section 3 (Evaluation and Qualification Criteria). The Documents / Information produced/ Furnished by the Bidder shall be subject to verification by the NCRTC at any stage during the Bidding Process or during the Contract Execution. In case of the incorrect certification/ information furnished by Bidder, being noticed during such verification, NCRTC reserves the Right to disqualify or take suitable action. However, the Bidder/Contractor shall not be absolved of the responsibility of submitting the genuine documents and will remain responsible for all the documents submitted even if NCRTC does not verify the Documents. Further, an undertaking in this regard shall also be submitted by the authorised signatory of the bidder in the Bidding Forms- Form UT-6.
	32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1. Unless permitted in the **BDS**, the determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, SPVs, parent entities, affiliates, Subcontractors (other than Specialist Subcontractors if permitted in ITB 33.2 of the Bidding document), Associates, Sister companies, or any other firm(s) different from the Bidder to meet the requirement of EQC in Section 3 unless they are part of Bidding entity.
	32.3 An affirmative determination shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. A negative determination shall result into the disqualification of the Bid, in which event the Employer shall not open Price Bids of such Bidders.
	32.4 The Employer reserves the right to reject the bid of the Bidder found to be bankrupt or insolvent, goes into liquidation, has a receiving or administrative order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.
33. Subcontractors	33.1 Unless otherwise stated in the **BDS**, the Employer does not intend for the contractor to execute any specific elements of the Works through nominated subcontractors.

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	33.2 If subcontractors are proposed for any of the key activities listed in Section 3 (Evaluation and Qualification) Criteria 2.4.2, they shall be considered as "Specialist Subcontractors" and shall meet qualification requirements for the relevant key activities.
34. Correction of Arithmetical Errors	34.1 During the evaluation of Price Bids, the Employer shall correct arithmetical errors on the following basis: (a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected. (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected. (c) If there is a discrepancy between the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Price Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Price Bid will be corrected. (d) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a), (b) and (c) above.
	34.2 If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors mentioned in ITB 14.2 and ITB 34.1, its Bid shall be disqualified and its bid Security may be forfeited.
35. Conversion to Single Currency	35.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified in ITB 15.4.
36. Preferences & Relaxations	36.1 Preferences & relaxations shall be applicable as specified in the **BDS**.
37. Evaluation and Comparison of Price Bids	37.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
	37.2 I. To evaluate the Price Bid, the Employer shall consider the following: a) the bid Price, excluding provisional sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Daywork items, where priced competitively; b) price adjustment for correction of arithmetic errors in accordance with ITB 34.1; c) price adjustment due to discounts offered in accordance with ITB 14.4; d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 35;

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	e) adjustment for nonmaterial nonconformities in accordance with ITB 31.3; f) assessment whether the bid is abnormally low in accordance with ITB 38; and g) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria). II. The Employer's evaluation of a Bid will exclude and not take into account, a) in the case of Goods/Plants/ Services/Works (as defined under General Conditions of Contract) offered from abroad, the details of taxes and duties, applicable in the Employer's country and payable on the Goods if the Contract is awarded to the Bidder are mentioned in the **BDS**; and b) in the case of Goods/Plants/ Services/Works (as defined under General Conditions of Contract) offered from within the Employer's country, the details of taxes and duties, applicable in the Employer's country and payable on the Goods if the Contract is awarded to the Bidder are mentioned in the **BDS**.
	37.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
	37.4 If this Bidding Document allows Bidders to quote separate prices for different contracts, and the award to a single Bidder of multiple contracts, the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Price Bid, is specified in Section 3 (Evaluation and Qualification Criteria).
	37.5 The Employer shall compare all substantially responsive Bids to determine the lowest evaluated Bid price, in accordance with ITB 37.2.
	37.6 Multiple Lowest Bidders (L-1) In case of a tie between the lowest bidders, the Employer shall invite the parties to submit a revised financial bid (Discounted Offer). The bid will be awarded to the bidder with the lowest revised financial bid, provided the rates remain reasonable and the bidder is technically suitable as per the bid requirements.
38. Abnormally Low bids	38.1 An abnormally low bid is one where the bid price, in combination with other elements of the bid, appears to be so low that it raises concerns as to the capability of the Bidder to perform the contract for the offered bid price. When the offered bid price appears to be abnormally low, the Employer shall undertake a three-step review process as follows: (a) identify abnormally low costs and unit rates by comparing them with the engineer's estimates, other substantially responsive bids, recently awarded similar contracts. In the first instance, reasonability of Bidder's offer is to be checked considering its past experience in the similar works, Bidder's acquaintance with the scope of work and any favorable conditions available to the bidder.

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	(b) in case reasonability of its offer is not established, Employer may seek a written explanation from the Bidder of the reasons for the offered bid price, including a detailed analysis of costs and unit prices, by reference to the scope, proposed methodology, schedule, and allocation of risks and responsibilities. This may also include information regarding the economy of the manufacturing process; the services to be provided, or the construction method to be used; the technical solutions to be adopted; and any exceptionally favorable conditions available to the Bidder for the works, equipment or services proposed. (c) After examining the explanation given and the detailed price analyses presented by the bidder, the Employer may: i) accept the bid, if the evidence provided satisfactorily accounts for the low bid price and costs, in which case the bid is not considered abnormally low; ii) In case the evidence provided does not satisfactorily accounts for the low bid price and cost as required above. In such case the bid shall be rejected and bid security shall not be executed.
39. Unbalanced Bids	39.1 If the Bid, which results in the lowest evaluated Bid Price, is substantially unbalanced in the opinion of the Employer. A bid is considered as substantially unbalanced, where, unit prices quoted for the items / schedules are, say, 50% higher than the average quoted price by other two lowest bidders and engineer's estimate for the same items / schedules, and where the total weightage of the items/schedules exceeds 5 % of the total bid price. The Employer may require the Bidder to produce detailed price analyses for such items/schedules of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed, as well as the pricing and sources of materials, equipment and labor. 39.2 After the evaluation of the information and detailed price analysis presented by the Bidder, the Employer may as appropriate: (a) accept the Bid (b) Reject the Bid
40. Employer's Right to Accept Any Bid, and to Reject Any or All Bids	40.1 The Employer reserves the right to (a) independently verify, disqualify, reject and/ or accept any and all submissions or other information and/ or evidence submitted by or on behalf of any Bidder, (b) suspend and/ or cancel the Bidding Process and/ or amend and/ or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto, (c) consult with any Bidder in order to receive clarification or further information; or (d) retain any information and/ or evidence submitted to the Employer by, on behalf of, and/ or in relation to any Bidder, without assigning any reason and without incurring any liability to Bidders. 40.2 It shall be deemed that by submitting the Bid, the Bidder agrees and releases the Employer, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/ or performance of any obligations hereunder, pursuant hereto and/ or in connection with the

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	Bidding Process and waives, to the fullest extent permitted by applicable laws, any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or in future.
41. Notice of Intention for Award of Contract	Standstill provisions are not applicable.
F. Award of Contract	
42. Award Criteria	42.1 The Employer shall award the Contract to the Bidder whose offer has been determined in line with ITB 37 to ITB 39 above to be the lowest evaluated Bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.
43. Notification of Award	43.1 Prior to the expiration of the period of bid validity, the Employer shall transmit the Notification of Award using the form included in Section 9 (Contract Forms) to the successful Bidder, in writing, that its Bid has been accepted. The equivalent of the respective currencies as submitted by the Bidder in the Price Bid shall also be stated in the Letter of Acceptance. Letter of Acceptance will be issued in two original and identical sets, in favour of the successful Bidder. Any one set may be retained by the successful Bidder and the other set is required to be returned by the successful Bidder, duly signed and stamped stating "Unconditionally accepted" on each page (including the enclosures) by the authorized signatory of the successful Bidder, as a token of unconditional acceptance of the same so as to reach the Employer within seven days of issue of this letter. 43.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.
44. Performance Security	44.1 Within 28 days of the issue of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 38 and ITB 39, using for that purpose the Performance Security Form included in Section 9 (Contract Forms), or another form acceptable to the Employer. **The commencement date shall be date of issue of Letter of Acceptance (LOA) or the date stipulated in LOA whichever is later.**
	44.2 If the successful bidder fails to submit the Performance Security within 28 days after the date of issue of LOA and requests for extension of time (if any) for submission, a penal interest of 15% per annum on Performance Security Amount/Outstanding Performance Security Amount (as the case may be) shall be charged for the delay beyond 28 (Twenty-Eight) days, i.e., from 29th day after the date of issue of LOA to the date of submission of Performance security.

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	If the Contractor fails to submit the requisite Performance Security within 28 days after issue of LOA or extension of time (if any), this shall constitute sufficient grounds for the annulment of the award and forfeiture of Bid security. Further, after submission of performance security, failure of signing of Contract Agreement shall also constitute sufficient grounds for the annulment of the award and forfeiture of Performance Security. In case re-bidding is resorted to, such Bidder(s) shall not be permitted to participate in the re-bidding process.
45. Signing of Contract	45.1 **The Contract Agreement shall be Signed within 60 days after the date** of **issue of the Letter of Acceptance subject to submission of Performance Security and its bank confirmation.**
46. Bidding-Related Complaints	46.1 The Bidder may submit its complaint arising out in Bidding process in writing, to: Title/position: **Executive Director/Procurement** Employer: **National Capital Region Transport Corporation Ltd.** Email address: procurementcell@ncrtc.in
47. Jurisdiction of Courts	47.1 The bidding process shall be governed by and construed in accordance with the laws of India and the Courts with jurisdiction in New Delhi shall have exclusive jurisdiction over all the disputes/issues arising under, pursuant to and/ or in connection with the bidding process.



Section 2: Bid Data Sheet

This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 (Instructions to Bidders).

A. General

ITB 1.1	The number of the Invitation for Bids (IFB) is: DM/EL/COR-OF/317 The Name of the Open Competitive Bidding (OCB) is: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC The Identification Number of the OCB is: 2026_NCRTC_285220_1

C. Preparation of Bids

ITB 11.2 (i)	The Bidder shall submit with its Technical Bid the following additional documents as furnished in Section 4 (Bidding Forms): **NIL**
ITB 11.3 (d)	The Bidder shall submit with its Price Bid the following additional documents: **NIL**
ITB 13.1	Alternative Bids **not permitted**.
ITB 13.2	Alternative times for completion **not permitted**
ITB 13.4	Alternative technical solutions **not permitted**.
ITB 14.2	The Bidder shall quote the prices of the works as per option (c).
ITB 14.5	The Prices quoted by the Bidder shall be adjusted as per GCC and PCC.
ITB 14.7	The total Bid Price is **Exclusive of Goods and Service Tax (GST) and Custom Duty.**

ITB 15.1	Bidder shall quote their offer only in Indian Rupees (INR).
ITB 15.2	The currency(ies) of Payment: INR
ITB 17.2	Domestic preference is applicable as per ITB 36
ITB 18.1	The bid validity period: **180 days from last date of Bid Submission**

E. Evaluation and Comparison of Bids

ITB 32.2	The qualifications of other firms such as the Bidder's subsidiaries, SPVs, parent entities, affiliates, Subcontractors (other than Specialist Subcontractors if permitted in ITB 33.2 of the Bidding document), Associates, Sister companies, or any other firm(s) different from the Bidder **is not permitted unless they are part of the bidding entity.**
ITB 33.1	The Employer does not intend for the contractor to execute any specific elements of the Works through nominated subcontractors.
ITB 36.1	**Following preferences & relaxations shall apply.** **A.** As present bid is for the work contract, **MSE registered firms shall not be exempted from payment of bid document cost and payment of Bid Security** as per the guidelines issued by Ministry of Micro, Small & Medium Enterprises, Government of India. **Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 is not applicable being a works contract.** **B.Public Procurement (Preference to Make in India)** In terms of Public Procurement (Preference to Make in India), Order 2017 circulated by Department for Promotion of Industry and Internal Trade (Public Procurement Section) Ministry of Commerce and Industry, vide their letter No. P-45021/2/2017-PP (BE-II) dt 16.09.2020, Only Class-I Local Supplier and Class-II Local Supplier are permitted to Bid. Non-Local Supplier are not permitted to participate in this Bid. Purchase Preference will apply as per the provisions of the order No. P-45021/2/2017-PP (BE-II) dt 16.09.2020 of DPIIT Public Procurement (Preference to Make in India), including DPIIT's Letter No. P-45021/1022/2019-BE-II-Part(1)(E-50310) dt 04.03.2021 and further amendment from time to time. **C.STARTUP INDIA** 1. **All Startups (Whether Micro & Small Enterprises or otherwise) are exempted from bid cost and bid security.** 2. **Definition of Startup:** Startup means an entity recognized and registered as Startup by Department of Industrial Policy and

	Promotions (DIPP), Ministry of Commerce and Industries, Govt. of India. 3. Any Relaxation for turnover and past experience, considered by the Employer for startups shall be as specified in Evaluation and Qualification Criteria. 4. Bidder Shall upload the scanned copies of their valid Startup Registration by Department of Industrial Policy and Promotions (DIPP), Ministry of Commerce and Industries, Govt. of India. No relaxation shall be given to the Bidder, if the Bid is not accompanied by such details. The above facility shall be applicable for single entity and in case of JV only If all the partners are Startups (Whether Micro & Small Enterprises or otherwise). **D. CONCURRENT APPLICATION OF PURCHASE PREFERENCE - DELETED**
ITB 37.2 (II) (a)	Details of Taxes and Duties to be excluded from evaluation of Bid by Employer: **Goods and Service Tax (GST) and Custom Duty.**
ITB 37.2 (II) (b)	Details of Taxes and Duties to be excluded from evaluation of Bid by Employer: **Goods and Service Tax (GST)**

Section 3: Evaluation and Qualification Criteria

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with relevant ITB, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

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1. Evaluation

In addition to the criteria listed in relevant ITBs, the other relevant factors are as follows:

1.1 Undertaking for Conformity to Employer's Requirements

The bidder shall submit an undertaking as mentioned in Letter of Technical Bid confirming the deployment of Key Equipment and Personnel in accordance with the requirements as stipulated in Section 6 (Employer's Requirements).

Non-compliance with equipment and personnel requirements described in Section 6 (Employer's Requirements) shall not normally be a ground for bid rejection and such non-compliance will be subject to clarification/submission of undertaking for the deployment of equipment and personnel as per bid document requirement during bid evaluation.

1.2 Completion Time

Since alternative Completion Time, is not permitted under ITB 13.2, hence this clause is not applicable.

1.3 Technical Alternatives

Since Technical alternatives, is not permitted under ITB 13.4, hence this clause is not applicable.

1.4 Specialist Subcontractors: Not applicable.

1.5 Quantifiable Nonconformities and Omissions

Subject to ITB 14.2 and ITB 37.2, the evaluated cost of quantifiable non conformities including omissions, is determined as specified in ITB 31.3.

1.6 Domestic Preference

Domestic preference is applicable as per ITB 36.

1.7 Other Criteria

NIL

1.8 Contracts (Single Contract/Multiple Contracts): Single Contract

1.9 Joint Venture Participation: Not Permitted

2. Qualification

2.1 Eligibility

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	Lead Partner	
2.1.1 Nationality					
Nationality in accordance with ITB 4.2.	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Forms ELI-1, ELI- 2, UT– 2
2.1.2 Conflict of Interest					
No conflicts of interest in accordance with ITB 4.3.	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Letter of Technical Bid
2.1.3 Blacklisting / Banning					
Not having been declared ineligible as described in ITB4.4.	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Letter of Technical Bid and Affidavit
2.1.4 Government-Owned Entity					
Bidder required to meet conditions of ITB 4.5.	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Forms ELI - 1; ELI - 2 with attachments

2.2 Historical Contract Non-performance

2.2.1 History of Non-performing Contracts

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	Lead Partner	
Non-performance of a contract[a] did not occur as a result of contractor default for last 5 calendar years from the last date of bid submission deadline.	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Form CON-1

[a] Non-performance, as decided by the Employer, shall include all contracts where

i. non-performance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract; and
ii. contracts that were so challenged but fully settled against the contractor.

Non-performance shall not include contracts where the Employer's decision was overruled by the dispute resolution mechanism. Non-performance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

[b] This requirement also applies to contracts executed by the Bidder as JV member.

Note: In case of non-performance of a Contract, the Bid shall be treated as non-responsive.

2.2.2 Suspension Based on Execution of Bid-Securing Declaration:-

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	Lead Partner	
Not under suspension from bidding by the Employer as the result of the execution of a Bid Securing Declaration.	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Letter of Technical Bid

2.3 Financial Situation

2.3.1 Historical Financial Performance

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	Lead Partner	
Submission of audited financial data for the last 03 financial years or from the date of incorporation, whichever is later, to demonstrate the current soundness of the Bidder's financial position. As a minimum, the Bidder's net worth for the last audited financial year calculated as the difference between total assets and total liabilities should be positive.	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Form FIN – 1 (Audited annual financial statements are not required to be submitted)

2.3.2 Average Annual Construction Turnover

Criteria	Compliance Requirements				Documents
Requirement	**Single Entity**	**Joint Venture**			**Submission Requirements**
		All Partners Combined	**Each Partner**	**Lead Partner**	
Minimum **Average Annual Construction Turnover** of **INR 26.75 Crore** within the last **05 (five)** years **FOR STARTUPS** Minimum Average Annual Construction Turnover of **INR 20.06 Crore** within the last **05 (five)** years	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Form FIN – 2

Note:

i. *In case date of incorporation is within the period of less than last 3 years, Average Annual Construction Turnover shall be calculated dividing the Available Construction Turnover by 3/5.*

ii. *Annual Construction turnover shall not include GST amount.*

2.3.3 Financial Resources

Criteria	Compliance Requirements				Documents
Requirement	**Single Entity**	**Joint Venture**			**Submission Requirements**
		All Partners Combined	**Each Partner**	**Lead Partner**	
The Bidder must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its current contract commitments defined in FIN - 4, meet or exceed the total requirement for the Subject Contract of **INR 4.46 Crores.**	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Form FIN – 3 and Form FIN – 4

2.4 Construction Experience

2.4.1 Contracts of Similar Size and Nature:

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	Lead Partner	
A. Participation as a contractor or JV partner in **One Single Contract/ work**, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 10.70 Crore** in the similar nature work mentioned below. OR B. Participation as a contractor or JV partner in **Two Single Contracts/ works**, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 6.69 Crore** in each Contract in the similar nature work mentioned below. OR C. Participation in **Three Single Contracts/ works** as a contractor or JV partner, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 5.35 Crore** in each Contract in the similar nature work mentioned below. **FOR STARTUP FIRMS:** A. Participation as a contractor or JV partner in **One Single Contract/ work**, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 8.03 Crore** in the similar nature work mentioned below. OR B. Participation as a contractor or JV partner in **Two Single Contracts/**	Must meet requirement	Not Applicable	Not Applicable	Not Applicable	Form EXP – 1

works, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 5.02 Crore** in each Contract in the similar nature work mentioned below. OR C. Participation in **Three Single Contracts/ works** as a contractor or JV partner, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 4.01 Crore** in each Contract in the similar nature work mentioned below. **Similar Nature Work shall mean:** **"**Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light of Government Building, Commercial building, Railway stations/Metros/RRTS, Airports, Sports stadium, Heritage Building/Ancient monument, Any other similar Façade lighting work of public use project**"**					

2.4.2 Construction Experience in Key Activities: Deleted

Notes: -

1. The work is considered as substantially completed if 80% or more of the work is physically completed which is to be substantiated by a certificate as per Note of Form Exp-1.

   OR

   if **80%** of the awarded contract value or revised contract value whichever is lower has been certified for Payment. This is to be substantiated by a certificate as per Note of Form Exp-1. (Applicable to clause 2.4.1)

2. Only the value of the contract as executed by the bidder in his own name should be indicated and shall be considered. Where a work is undertaken by a group (Joint Venture), only that portion of the work which is undertaken by the concerned bidder shall be considered and the remaining done by the other partners of the group shall be excluded. This is to be substantiated with a specific certificate as per Note of Form Exp-1 / Form Exp-2. In case specific division of works undertaken by the group partners is not stated in the submitted documents, then the percentage participation of the bidder in the group as stated in the submitted documents (JV/ agreement or Certificate) shall be considered as the value of the work done by the bidder/partner of JV. (Applicable to clause 2.4)

3. a) For Clause 2.3.1 Historical Financial Performance: In case the financial data is in a currency(ies) other than INR, the same shall be converted into equivalent INR by adopting Exchange rate between that currency and INR as on last day of the respective financial year.

b) For Clause 2.3.2 Average Annual Construction Turnover, in case the figure is stated in currency other than INR, the same (currency of each financial year) shall be converted to INR by adopting the Exchange rate between that Currency and INR as on last day of the respective financial year.

The Annual turnover in INR or converted into INR as above from the currency other than INR, shall be updated by 5% per annum compounded annually from the last day of the respective financial year up to the last day of the latest audited Financial year submitted by Bidder.

c) For Clause 2.3.3, Financial Resources: In case the currency(ies) of current Contract commitments and Bank Certificate are in other than INR the same shall be converted into equivalent INR by adopting exchange rates between that Currency and INR as on 28 days prior to the deadline for bid submission.

(Note: The Bidder may submit the overdraft / Fund based credit facilities (Bank certificate) for meeting the financial resources requirement. Any letter or document not complying with this requirement shall not be considered as supplementary financial resources.)

Apart from this, any type of Solvency certificate submitted by Bidder shall not be considered as a credit line to meet the financial resources requirement and in such cases the financial resources requirement of the bidder shall be calculated by deducting the current contract commitments from the working capital).

d) For Clause 2.4, such works with payment received in other than INR shall be converted in INR by adopting the Exchange rate between that Currency and INR as prevailing on the completion date mentioned in the completion certificate and if month of completion is mentioned in the Completion Certificate then the exchange rate of last working day of the Month shall be taken. The value of work in INR or converted into INR as above from the currency other than INR shall be updated by 5% per annum compounded annually up to the last day of the month previous to the month of deadline for bid submission.

e) The source and modality of rates of exchange for (a), (b) and (c) above shall be as defined in ITB 15.4. Bidder should indicate the source used with documentary evidence for conversion and conversion rates used for converting foreign currency into INR.

4. If the submitted work(s) in support of clause 2.4.1 is a composite work/contract comprising of other works also, then **Client certificate submitted by the Bidder as per Note of Form Exp-1/ Exp-2 shall clearly indicate the quantum of similar nature of work/specific key activities executed by the Bidder for the value of work required in clause 2.4.1.**
5. Bidder should propose the light fixtures of the OEM who should have its own NABL with accredited lab certificate.
6. The bidder shall have maintenance experience of minimum 2 years of work **executed by the Bidder required in clause 2.4.1** of similar nature of work having RGBW and/or dot pixel light in the last 7 years including current financial year of the work submitted the qualification under.
7. Bidder should submit the ISO: 9001:2015, ISO:14001:2015, ISO 45001:2018, ISO: 50001 certificates of proposed OEM of Light Fixtures.
8. The Bidder shall submit an Authorization Letter from the OEM (Original Equipment Manufacturers means Manufacturer of Light Fixtures), duly signed by an authorized representative of the OEM, confirming its commitment to provide lighting design/simulation services, supply of materials, fulfil warranty obligations, and extend necessary technical, commissioning, and maintenance support to the Bidder throughout the execution and warranty period of the contract.

Section 4: Bidding Forms

CHECK LIST OF THE DOCUMENTS TO BE SUBMITTED				
Bid No. :				
Name of Work:				
Name of the Bidder.:				
Sl. No.	**Item**	**Submitted**		**Reference Page No. in the Technical Submittal**
		Yes	**No**	
A.	**CHECK SHEET FOR TECHNICAL BID SUBMISSION**			
1.	**Bid Security:**			
1.1	Is Bid Security of requisite amount submitted in separate sealed envelope?			
	Mode of Submitting Bid Security (Please tick the appropriate category) : (i) Demand Draft (DD): ☐ (ii) Bank Guarantee (BG): ☐ (iii) Banker's Cheque: ☐ (iv) FDR: ☐ (v) Seeking Exemption for startup: ☐			
2.	**The written confirmation of authorization to sign on behalf of the Bidder:**			
2.1	In case of Private/Public Companies, a Power of Attorney (POA) from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution shall also be submitted, where applicable.			
2.2	In case of proprietorship bidders, Power of Attorney by the Proprietors.			
2.3	In case of partnership bidders, Power of Attorney duly signed by all the partners.			
2.4	In case of Limited Liability partnership (LLP), a POA from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal			

	entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution shall also be submitted, where applicable.			
2.5	In case of Joint Venture, Power of Attorney duly signed by individual partners to the Lead partner as per the form given in Section-4 with stipulated documents.			
3.	**DOCUMENTS REQUIRED AS PER BID**			
3.1	Letter of Technical Bid			
3.2	Affidavit			
3.3	Method Statement			
3.4	Construction/Any other Schedule			
3.5	Form ELI-1 : Bidder's Information Sheet			
3.6	Form ELI-2 : Joint Venture / Specialist Contractor Information Sheet			
3.7	Form ELI-3 : Intended Joint Venture Agreement			
3.8	Form ELI-4 : Power of Attorney (POA) Single Entity/ Joint Venture (JV Partners)			
3.9	Form ELI- 5: Format for Power of Attorney to Lead Partner and Authorized Representative of Joint Venture (JV)			
3.10	Form CON-1: Historical Contract Non Performance			
3.11	Form FIN-1: Historical Financial Performance			
3.12	Form FIN-2- Average Annual Construction Turnover			
3.13	Form FIN-3- Availability of Financial Resources			
3.14	Form FIN-3A- Evidence of Availability of Credit Line Financial Resources			
3.15	Form FIN-4- Financial Requirements for Current Contract Commitments			
3.16	Form FIN-5- Self – Assessment Tool for Bidder's Compliance to Financial Resources.			
3.17	Form EXP-1- Contracts of Similar Size and Nature			
3.18	Form EXP-2- Project Experience in Key Activities			
3.19	Form UT-1 : Undertaking from Specialist sub-contractor			
3.20	Form UT-2 : Undertaking for neighbor sharing land border with India			
3.21	Form UT-3 :			
3.22	Form: UT -3A-			
3.23	Form UT-4: Certificate for Local Content			
3.24	Form UT 5: Undertaking for Encashment/Forfeiture of Bid Security			
3.25	Form UT-6: Undertaking for Genuiness of Documents Submitted/ Uploaded by the Bidder alongwith the Bid Submission			
4.	**ADDITIONAL REQUIREMENT**			
4.1	PAN No.			
4.2	GST registration number			
B.	**CHECK SHEET FOR PRICE BID SUBMISSION**			

1.	The Price bid is provided in the form of MS-EXCEL file. The bidder shall download the MS-EXCEL file and after quoting their price shall upload the same in the e-procurement portal. The bidder shall complete the Price Bid in accordance with the instructions given in the Price Bid. No details about price bid shall be submitted / disclosed directly or indirectly in the technical bid and in such case, the Bid shall be rejected.

Note:

(i) The check list is indicative and not exhaustive. The bidder must go through the complete bid documents and submit the required document accordingly.

(ii) If any of the above form or criteria is not applicable to the bidder, then they can simply indicate N.A. against the relevant column.

I hereby confirm that:

(i) I have checked the above list with our submittal. I am also aware that if our bid is not containing the above documents, the Employer has the right to reject our bid.

(ii) All the pages of bid submission are properly index and numbered.

Seal:
Date:

(Signature of Authorised representative of Bidder)

Letter of Technical Bid

-Note-

The bidder must accomplish the Letter of Technical Bid on its letterhead clearly showing the bidder's complete name and address.

Date: .....

To:

National Capital Region Transport Corporation Ltd.
GatiShakti Bhawan,
INA, New Delhi – 110023
Tel : +91-11- 2466 6700
Fax :+91-11- 2466 6723

Subject: Technical bid submission in response to Bidding Document no. Bid No. DM/EL/COR-OF/317: Subject: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

Dear Sir/ Ma'am,

With reference to your Bidding Document dated _____, I/we, hereby submit my/our Technical Bid for the aforesaid Work. The Bid is unconditional and unqualified. I/ We, the undersigned, declare that:

(a) I/ We hereby confirm that, we have downloaded the complete set of bidding documents including all addendum/corrigendum/clarifications along with the set of enclosures issued up to the deadline of submission of Bid on e-procurement portal. We have examined and have no reservations to the Bidding Documents, including addendum/corrigendum/clarifications issued in accordance with Instructions to Bidders (ITB). We accordingly offer to design, execute, and complete the Works and remedy any defects therein so that they are fit for the purposes defined in the Contract, and in conformity with the terms and conditions contained in the Contract. I/ We agree and undertake to abide by all the terms and conditions of the Bidding Document.

(b) We offer to execute in conformity with the Bidding Documents the following Works:

Bid No. and Name of Work: Bid No. DM/EL/COR-OF/317: Subject: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

We are participating in the Bids for Bid No. DM/EL/COR-OF/317

(c) My/ Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of 180 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

(d) My/ Our firm, including any Subcontractors or Suppliers for any part of the Contract, have nationalities in accordance with ITB 4.2.

(e) I/ We, including any Subcontractors or Suppliers for any part of the Contract, do not have any conflict of interest in accordance with ITB 4.3.

(f) I am/ We are not participating, as a Bidder, either individually or as partner in a Joint Venture, in more than one Bid in this bidding process in accordance with ITB 4.3(e), other than alternative bids submitted in accordance with ITB 13.

(g) My/ Our firm, Joint Venture partners, associates, parent company, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the Contract, are not subject to, or not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Employer.

(h) Bidder or any of its constituents and /or subcontractor / subconsultant included in the bid have not been blacklisted/banned for business dealings with Ministry of Housing and Urban Affairs (MoHUA) along with any of its attached and subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance issuing banning of business applicable over all departments with the banning being valid as on the last date of deadline for submission of bids, except in cases where such blacklisting/banning has been withdrawn by Competent Authority or has ceased on the deadline for submission of the bids, for which satisfactory evidence is to be produce.

(i) Our firms, Joint Venture partners, associates, parent company's affiliates or subsidiaries, including any Subcontractors or Suppliers key officers and directors have not been [charged or convicted] of any criminal offense (including felonies and misdemeanors) or infractions/violations of ordinance which carry the penalty of imprisonment.

(j) I/ We understand that it is our obligation to notify Employer should our firm, Joint Venture partners, associates, parent company, affiliates or subsidiaries, including any Subcontractors or Suppliers, be temporarily suspended, debarred or become ineligible to work with Employer, the Employer's country, or any of our key officers and directors be charged or convicted of any criminal offense or infractions/violations of ordinance which carry the penalty of imprisonment.

(k) a. We are not a government-owned enterprise
b. We are a government-owned enterprise but meet the requirements of ITB 4.5.
(strike out which is not applicable from a & b above)

(l) I/ We have not been suspended nor declared ineligible by the Employer based on execution of a Bid-Securing Declaration in accordance with ITB 4.6.

(m) I/ We agree to permit Employer or through their Auditors to inspect accounts, records and other documents relating to the bid submission and Contract performance pertaining to contractor, supplier, sub-contractor.

(n) If my/ our Bid is accepted, we commit to mobilize key equipment and personnel in accordance with the requirements set forth in Section 6 (Employer's Requirements) or as otherwise agreed with the Employer.

(o) I/ We understand that in case it is found during the evaluation or at any time before signing of the Contract or after its execution and during the period of subsistence thereof, that we have made material misrepresentation or has given any materially incorrect or false information, then remedial actions shall be taken against us in accordance with ITB 3.1 (d).

(p) I/ We declare that I/ we and any of my/ our constituents are not liable to be disqualified in Accordance with ITB 4.4, and we are enclosing the affidavit for the same as per the Performa given in the Bidding Document.

(q) I/ We have not made any deviations from the requirement of the bidding document and I/ we have also not made any tampering or changes in the bidding documents on which the bid is being submitted and if any tampering or changes are detected at any stage, I/ we understand the bid will invite rejection and forfeiture of Bid Security /the Contract will be liable to be terminated along with forfeiture of performance security, even if LOA has been issued.

(r) I/ We declare and confirm that in the submission of this bid, no agent, middleman or any intermediary has been, or will be engaged to provide any services or any other item of work related to the award and performance of this Contract. I/ We further confirm and declare that no agency commission or any payment which may be construed as an agency commission has been, or will be, paid and that the bid price does not include any such amount. I/ We acknowledge the right of the Employer, if he finds to the contrary, to declare our bid to be noncompliant and if the Contract has been awarded to declare the Contract null and void.

(s) If my/ our bid is accepted, I/ we commit to submit work method statements for all major activities and get these approved from the engineer prior to commencing work on such activities. I/ We also understand that the work shall be executed as per the approved method statements without any deviations.

(t) I/ We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive

(u) I/ We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding Contract between us, until a formal Contract is prepared and executed; and

(v) I/ We certify that in terms of Public Procurement (Preference to Make in India), Order 2017 as mentioned in clause 36.1 of BDS. A certificate from a practicing chartered accountant or cost accountant and by the bidder in terms of DPIIT's Order mentioned above is submitted with our offer as **Form (UT-4)** of the Bidding Form.

We acknowledge that false declaration by the Bidder regarding local value addition including payments to be made to their vendors for local value addition shall be treated as a fraudulent practice and will be in breach of the Code of Integrity under Rule 175(1) (i)(h) of the General Financial Rules for which a Bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

(w) If my/ our bid is accepted, we commit to submit a performance security in accordance with the Bidding Documents;

Name .....

In the capacity of .....

Signed .....

Duly authorized to sign the Bid for and on behalf of .....

Date.....

AFFIDAVIT

*(To be executed in presence of Public Notary on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper has to be in the name of the bidder)***

I_____***(Name and designation)*** appointed as the attorney/authorized signatory of the bidder (including its constituents), M/s._____(**hereinafter called the bidder**) for the purpose of the Bid for the work of _____ _____ _____ _____ as per the bid No._____ of NCRTC, do hereby solemnly affirm and state on behalf of the bidder including its constituents as under:

1. We understand that Employer requires that bidders, suppliers, and contractors must observe the highest standard of ethics during the procurement and execution of such contracts. We confirm and undertake that we including our constituents, any subcontractors or suppliers for any part of the Contract directly or otherwise have not been / shall not be engaged in corrupt, fraudulent, collusive, abusive, coercive, or obstructive practices or other integrity violations in competing for the Contract in accordance with ITB 3.

   We understand that the Employer has the right to reject our bid at any stage if it determines that we have directly or otherwise, engaged in corrupt, fraudulent, collusive, abusive, coercive, or obstructive practices or other integrity violations in competing for the Contract and will sanction a bidder or its successor, including declaring ineligible for a stated period of time, to participate in Employer's activities, if it at any time determines that the bidder has, directly or otherwise, engaged in corrupt, fraudulent, collusive, abusive, coercive, or obstructive practices or other integrity violations in competing for, or in executing a Contract of the Employer in accordance with ITB 3;

2. That the bidder or any of its constituents and/or sub-contractor /sub-consultant included in the bid have not been blacklisted/banned for business dealings with Ministry of Housing and Urban Affairs (MoHUA) along with any of its attached and subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance issuing banning of business applicable over all departments with the banning being valid as on the last date of submission of bids, except in cases where such blacklisting/banning has been withdrawn by Competent Authority or has ceased on the deadline for submission of the bids, for which satisfactory evidence is to be produce.

3. That the Partner(s) of an existing JV who is not blacklisted/banned in its individual capacity by Ministry of Housing and Urban Affairs (MoHUA) along with any of its attached and subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance, shall be allowed to participate in the future Bids of the Employer.

4. **(i)** That no previous contract(s) of the bidder (or of any of its constituents, in case the bidder is a consortium) has been terminated for contractor's failure/default by: (a) MoHUA or any of its attached and/or subordinate offices; or (b) any metro rail organizations in India, in each case, any time prior to 2 (two) years before the deadline for submission of bids.

OR

(ii) That previous contract(s) of the bidder (or of any of its constituents, in case the bidder is a consortium) has been terminated for contractor's failure/default by: (a) MoHUA or any of its attached and/or subordinate offices; or (b) any metro rail organizations in India, in each case, any time prior to 2 (two) years before the deadline for submission of bids. However, such termination(s) has been: (a) stayed by a competent court of law / arbitral tribunal and such stay continues to be in effect as of the bid submission deadline; (b) declared to be unlawful or wrongful termination by a competent court of law / arbitral tribunal and such order continues to be in effect as of the bid submission deadline; or (c) revoked by the concerned counterparty.

(Strike out (i) or (ii) from above whichever is not applicable to the bidder)

5. That the Bidder or any of its constituents is neither Bankrupt/Insolvent nor is in the process of winding-up nor such a case is pending before any Court on the deadline of submission of the bid.

6. That the name of the Bidder or any of its constituents is not on the list of "Poor Performer" of MOHUA along with any of its attached and subordinate offices or of any metro rail organizations in India as on the deadline for submission of bid.

7. We declare and certify that we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.

8. We declare that the information and documents submitted along with the bid by us are correct and we are fully responsible for the correctness of the information and documents, submitted by us.

9. We understand that Bidders shall immediately inform the Employer, in case Bidder ceased to fulfill eligibility or Employer requests to provide evidence for their continued eligibility in terms of ITB 4. In case the bidder fails to inform the Employer or submits a false affidavit, the Employer has the right to reject the bid and Bidder shall also be liable for Banning of Business dealings by the Employer for a period of 02 (two) years.

10. We understand that in case it is found during the evaluation or at any time before signing of the Contract or after its execution and during the period of subsistence thereof, that we have made material misrepresentation or has given any materially incorrect or false information, then remedial actions shall be taken against us in accordance with ITB 3.1 (d).

(DEPONENT)
SEAL AND SIGNATURE OF THE BIDDER

Verification:

Verified on _____ day of _____ at _____ that the contents of the above-mentioned affidavit are true and correct and nothing material has been concealed there from.

(DEPONENT)
SEAL AND SIGNATURE OF THE BIDDER

*** The contents in Italics are only for guidance purpose and details as appropriate, are to be filled in suitably by Bidder.*

Attestation before Magistrate/Public Notary

Bid Security
Bank Guarantee

(On non-judicial stamp paper of the appropriate value in accordance with Stamp Act. The stamp paper should be in the name of the Executing Bank).

From:

.....[***Insert Bank's Name, and Address of Issuing Branch or Office]*.....**

To:

National Capital Region Transport Corporation Ltd.,
GatiShakti Bhawan, INA, New Delhi-110023

Tele: +91-11-24666700,

Email: ggm.enm.elev@ncrtc.in

Beneficiary: National Capital Region Transport Corporation Ltd. (hereinafter called "the Employer"**)**

Date: .....

Bid Security No.: .....

We have been informed that . . . . . *[***Insert** ***name of the Bidder]***..... (hereinafter called "the Bidder") intends to submit to you its bid (hereinafter called "the Bid") for the execution of . . . . . [***name of contract***]. . . . . under Invitation for Bids No. . . . . .dated..... ("the IFB").

WHEREAS, the Bidder is required to furnish Bid Security for the sum of ***[Insert Value of Bid Security required]***, in the form of Bank Guarantee, according to your conditions of Bid.

AND

WHEREAS, ...***[Insert Name of the Bank]***, with its Branch .....***[Insert Address]*** having its Headquarters office at..... ***[Insert Address]***, hereinafter called the **Bank,** acting through .....***[Insert Name and Designation of the authorised persons of the Bank]***, have, at the request of the Bidder, agreed to give guarantee for Bid security as hereinafter contained, in favour of the Employer:

1. KNOW ALL MEN that by these present that I/We the undersigned ***[Insert name(s) of authorized representatives of the Bank],*** being fully authorized to sign and incur obligations for and on behalf of the Bank**,** confirm that the Bank, hereby, unconditionally and irrevocably guarantee to pay to the Employer full amount in the sum of ***[Insert Value of Bid Security required]*** as above stated.

2. The Bank undertakes to immediately pay on presentation of demand by the Employer any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Employer on the Bank shall be final, conclusive and binding, absolute and unequivocal on the Bank notwithstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Bidder or Bank.

3. The Bank shall pay the amount as demanded immediately on presentation of the demand by Employer without any reference to the Bidder and without the Employer being required to show grounds or give reasons for its demand of the amount so demanded.

4. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Bidder.

5. The Bank agrees that no change, addition, modifications to the terms of the Bid document or to any documents, which have been or may be made between the Employer and the Bidder, will in

any way absolve the Bank from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification made by Employer at any time.

6. That this Guarantee commences from the date hereof and shall remain in force till ..... **(Date to be filled as mentioned in clause 1.2 (a) of IFB (Bid Schedule))**

7. The Bank Guarantee is unconditional and irrevocable.

8. The expressions Bank and Employer herein before used shall include their respective successors and assigns.

9. The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the Employer. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No.758, except that the supporting statement under Article 15 (a) is excluded.

10. The Guarantee shall be valid in addition to and without prejudice to any other security Guarantee (s) of Bidder in favour of the Employer. The Bank, under this Guarantee, shall be deemed as Principal Debtor of the Employer.

11. Notwithstanding anything contained herein:

    a) Our liability under this Bank Guarantee shall not exceed Rs..... (Rupees.....)

    b) This Bank Guarantee shall be valid up to .....

    c) We are liable to pay the guarantee amount or part thereof under this Bank Guarantee only & only if you serve upon us a written claim or demand on or before.....

    d) The bank guarantee shall be payable/ Encashable at Delhi/ NCR.

Date .....
Place.....

Bank's Seal and authorized signature(s)

[Name in Block letters].....

[Designation].....

[P/Attorney] No.

Witness:

1 Signature
Name & Address & Seal

2 Signature
Name & address & Seal

Bank's Seal
P/Attorney] No.

Note:

All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.

Technical Proposal

Method Statement

Construction Schedule

Bidders Qualification

To establish its qualifications to perform the contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the following information requested in the corresponding Information Sheets.

Form ELI - 1: Bidder's Information Sheet (Details of Sole Bidder/Joint Venture)

Bidder's Information	
Bidder's (Firm/ Company) Name	
Name of each partner (in case of a Joint Venture)	
Whether MSME/Startup,	❑ MSME (Micro, Small & Medium Enterprises) ❑ Startup ❑ None of the above
Whether Government / Non-Governement	❑ Government ❑ Non-Government
Bidder's country of constitution/ Incorporation	
Legal Status of JV (incorporated/ Unincorporated)	
Bidder's year of constitution/Incorporation	
Name, Designation, email id & Contact number of Bidder's authorized representative	
Specimen Signature of Authorized representative	

Bidder's (Company/Firm) address, telephone number(s), fax number(s), e-mail address in country of constitution/Incorporation	
Bidder's Bank Account details for the refund of Bid Security (if submitted in the form of DD/BC) by RTGS/NEFT	

Attached are copies of the following documents.

- ❑ 1. In case of a single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2.
- ❑ 2. Affidavit in case of Proprietary firm
- ❑ 3. Partnership Deed in case of partnership firm.
- ❑ 4. Authorization to represent the firm or Joint Venture named above, in accordance with ITB 20.2.
- ❑ 5. In case of a Joint Venture, Joint Venture agreement, in accordance with ITB 4.1.
- ❑ 6. In case of a government-owned enterprise, any additional documents not covered under 1 above required to comply with ITB 4.5.
- ❑ 7. In case of MSME/Startup, attach required certificate.

(Signature of Authorised representative of bidder)

Form ELI - 2: Joint Venture/ Specialist Subcontractor Information Sheet
Each member of the Joint Venture and Specialist Subcontractor must fill out this form separately.

Joint Venture / Specialist Subcontractor Information	
Bidder's (Firm/ Company) Name in case of JV	
Joint Venture Partner's or Specialist Subcontractor's name	
Joint Venture Partner's or Specialist Subcontractor's country of constitution/ Incorporation	
Whether, Joint Venture Partner's or Specialist Subcontractor's MSME/Startup	❑ MSME (Micro, Small & Medium Enterprises) ❑ Startup ❑ None of the above
Whether Government / Non-Governement	❑ Government ❑ Non-Government
Joint Venture Partner's or Specialist Subcontractor's year of constitution/ Incorporation	
Joint Venture Partner's or Specialist Subcontractor's address in country of constitution/ Incorporation, email and contact details	
Joint Venture Partner's or Specialist Subcontractor's authorized representative information (name, designation, signature, telephone number(s), fax number(s), e-mail address)	
Attached are copies of the following documents. 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2. 2. Authorization to represent the firm named above, in accordance with ITB 20.2. 3. Affidavit in case of Proprietary firm 4. Partnership Deed in case of partnership firm. 5. In case of a Joint Venture, Joint Venture agreement, in accordance with ITB 4.1. 6. In case of a government-owned enterprise, any additional documents not covered under 1 above required to comply with ITB 4.5. 7. In case of MSME/Startup, attach required certificate.	

(Signature of Authorised representative of bidder)

Form CON - 1: Historical Contract Non-performance

Each Bidder must fill out this form in accordance with Criteria 2.2.1 and 2.2.3 of Section 3 (Evaluation and Qualification Criteria) to describe any history of nonperforming contracts and pending litigation or arbitration formally commenced against it.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Name of the Bidder/Joint Venture Partner: _____

Table 1: History of Nonperforming Contracts

Choose one of the following:

❑ No nonperforming contracts.

❑ Below is a description of nonperforming contracts involving the Bidder (or each Joint Venture member if Bidder is a Joint Venture).

(Please tick (√) any one the Square box above)

Year	Description	Amount of Non-performed Portion of Contract (INR equivalent)	Total Contract Amount (INR equivalent)
[insert year]	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for nonperformance: *[indicate main reason(s)]*	*[insert amount]*	*[insert amount]*

(Signature of Authorised representative of bidder)

Form FIN - 1: Historical Financial Performance

Each Bidder must fill out this form.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Name of the Bidder/Joint Venture Partner: _____

	Financial Data from Balance Sheet for Previous 3 Years (figure in INR)		
	Year 1*	**Year 2**	**Year 3**
Total Assets (TA)			
Total Liabilities (TL)			
Net Worth = TA – TL			
Current Assets (CA)			
Current Liabilities (CL)			
Working Capital = CA – CL			

*Year 1 shall be the latest audited financial year .....

Most Recent Working Capital		To be obtained for most recent year and carried forward to FIN - 3 Line 1; in case of Joint Ventures, to the corresponding Joint Venture Partner's FIN – 3.

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports.

_____

(Signature of CA/Auditor)

Name of CA/Auditor:_____

Registration No: _____

(Seal)

UDIN No._____

SEAL AND SIGNATURE OF THE BIDDER

Notes-

- The contents of this Form should be certified by a Chartered Accountant/Auditor (In case bidder or JV Partner is Indian, the Form should be certified by generating Unique Document Identification Number (UDIN) as per Gazette Notification No.1-CA(7)/192/2019 dated 02.08.2019), failing which Employer has right to reject the Bid.

- In case of Financial Statements are in currency(s) other than INR, in addition to above, Bidder shall also provide above information in separate sheet (**duly mentioning the figures in foreign currency, exchange rate and converted equivalent INR amount**) duly certified by Chartered Accountant/Auditor (In case bidder or JV Partner is Indian, the Form should be certified by generating Unique Document Identification Number (UDIN) as per Gazette Notification No.1-CA(7)/192/2019 dated 02.08.2019) in INR equivalent by using methodology for adopting exchange rate as specified in Note 7 of EQC and ITB 15.4.

Form FIN - 2: Average Annual Construction Turnover

Each Bidder must fill out this form.

The information supplied should be the Annual Construction Turnover of the Bidder or each member of a Joint Venture in terms of the amounts billed to clients for each year for work in progress or completed.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Name of the Bidder/Joint Venture Partner: _____

Annual Construction Turnover Data for the Last 5 Years			
Year	**Amount Currency (Excluding of GST)**	**Exchange Rate**	**Turnover Amount in INR (Excluding of GST)**
Year 1*			
Year 2			
Year 3			
Year 4			
Year 5			
*Year 1 shall be the latest audited financial year..... **Average Annual Construction Turnover**			

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports.

_____

(Signature of CA/Auditor)

Name of CA/Auditor:_____

Registration No: _____

_____

(Seal)

UDIN No._____

_____

SEAL AND SIGNATURE OF THE BIDDER

Notes:

- **The turnover shall be calculated excluding of GST.**
- The contents of this Form should be certified by a Chartered Accountant/Auditor (In case bidder or JV Partner is Indian, the Form should be certified by generating Unique Document Identification Number (UDIN) as per Gazette Notification No.1-CA(7)/192/2019 dated 02.08.2019), failing which Employer has right to reject the Bid.
- Exchange rate shall be adopted by using methodology as specified in Note 7 of EQC and ITB 15.4.

Form FIN – 3: Availability of Financial Resources

Bidders must demonstrate sufficient financial resources, comprising of Working Capital supplemented by credit line statements or overdraft facilities to meet the Bidder's financial resources requirements for;

(a) its current contract commitments, and

(b) the subject contract.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately:

Name of the Bidder/Joint Venture Partner: _____

Financial Resources		
No.	**Source of financing**	**Amount (INR equivalent)**
1	Working Capital (to be taken from FIN - 1)	
2	Credit Line (must be substantiated by FIN - 3A) [a]	
	Total Available Financial Resources	

[a] *To be considered, Credit Line must be substantiated by a letter from the bank issuing the line of credit, specific for the subject Package as prescribed in Form FIN-3A. Any letter or document not complying with this requirement shall not be considered as supplementary financial resources.*

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports.

_____
(Signature of CA/Auditor)
Name of CA/Auditor:_____
Registration No: _____
_____
(Seal)
UDIN No._____

_____

SEAL AND SIGNATURE OF THE BIDDER

Note:

1. The contents of this Form should be certified by a Chartered Accountant/Auditor (In case bidder or JV Partner is Indian, the Form should be certified by generating Unique Document Identification Number (UDIN) as per Gazette Notification No.1-CA(7)/192/2019 dated 02.08.2019), failing which Employer has right to reject the Bid.
2. In case of package specific bank certificate (in Format Form FIN 3A) is submitted, then the same shall be considered to meet the requirement of financial resources, irrespective of Current Contract Commitments and negative working capital.
3. In case of bank certificate with sanctioned credit limits is submitted instead of package specific bank certificate, then in such cases bank certificate shall indicate the availability of credit limits/overdraft facilities/fund based limits as on 28 days prior to the bid submission end date. However, in such cases, current contract commitments and latest working capital shall also be considered.

[In case of Single Entity]
(On Bank's Letter Head)

Form FIN – 3A: Evidence of Availability of Credit Line Financial Resources

Date : _____

[Each Bidder must fill out this form to demonstrate financial resources comprising credit line statements or overdraft facilities, as stated in form FIN-3.]

Project Name:

Bidding Package Name and Identification Number: ..... *(to be filled in as indicated in ITB 1.1)* ...

BANK CERTIFICATE

This is to certify that M/s ..... is a reputed company with a good financial standing.

If the contract for the work, namely..... is awarded to the above firm, we shall be able to provide overdraft / Fund based credit facilities to the extent of *Rs ..... to meet their working capital requirements for executing the above contract.

___Sd.___
Name of Bank: _____
Name of Bank Manager_____
ID of Bank Official :
Address of the Bank_____

* Value to be calculated from 28 days prior to the Bid submission deadline.

Note: Solvency certificate issued by the bank will not be considered as overdraft/ fund based credit facility.

[In case of Joint Venture]

(On Bank's Letter Head)

Form FIN – 3A: Evidence of Availability of Credit Line Financial Resources (in case of JV)

Date : _____

[Each Bidder must fill out this form to demonstrate financial resources comprising credit line statements or overdraft facilities, as stated in form FIN-3.]

Project Name:

Bidding Package Name and Identification Number: ..... *(to be filled in as indicated in ITB 1.1)* ...

This is to certify that M/s ..... who has formed a Joint Venture with M/s ..... [JV Partner-1] and M/s ..... [JV Partner-2] for participating in this bid, is a reputed company with a good financial standing.

If the contract for the work, namely..... is awarded to the above joint venture, we shall be able to provide overdraft / Fund based credit facilities to the extent of *Rs..... to M/s ..... to meet their working capital requirements for executing the above contract.

Sd.___
Name of Bank: _____
Name of Bank Manager_____
ID of Bank Official :
Address of the Bank_____

* Value to be calculated from 28 days prior to the Bid submission deadline.

Note: Solvency certificate issued by the bank will not be considered as overdraft/ fund based credit facility.

Form FIN- 4: Financial Requirements for Current Contract Commitments

Bidders (or each Joint Venture partner) should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Name of the Bidder/Joint Venture Partner: _____

Current Contract Commitments (figure in INR)							
No.	**Name of Contract**	**Employer's Contact (Address, Tel, Fax)**	**Contract Completion**		**Outstanding Contract Value (X)** [a]	**Remaining Contract Period in months (Y)** [b]	**Monthly Financial Resources Requirement (X / Y)**
			Original Date	**Revised Date (if any)**			
1							
2							
3							
4							
	Total Monthly Financial Requirement for Current Contract Commitments						. . . . .

[a] *Remaining outstanding contract values to be calculated from 28 days prior to the bid submission deadline (In case the value of contract is in a currency other than Indian Rupees, the value of contract in foreign currency shall be converted into equivalent Indian Rupees with the exchange rates as specified in* Note 7 of EQC and *ITB 15.4.*

[b] *Remaining contract period to be calculated from 28 days prior to bid submission deadline.*

Certified that current commitments on all the contracts that have been awarded or for which a letter of intent or acceptance has been received or for the works in progress or the works approaching completion, value of outstanding work has been indicated in the above table correctly. It is further certified that if later on the employer discovers that information provided in the table is incorrect then the employer may treat our bid invalid and it may be liable for rejection

SEAL AND SIGNATURE OF THE BIDDER

_____
(Signature of CA/Auditor)
Name of CA/Auditor:_____
Registration No: _____
_____
(Seal)
UDIN No._____

The above information shall also be certified by Chartered Accountant/Company Auditor, in original, under his/her signature, stamp and membership number. **(In case bidder or JV Partner is Indian, the Form should be certified by generating Unique Document Identification Number (UDIN) as per Gazette Notification No.1-CA(7)/192/2019 dated 02.08.2019), failing which Employer has right to reject the Bid.**

Form FIN - 5: Self-Assessment Tool for Bidder's Compliance to Financial Resources (Criterion 2.3.3 of Section 3)

This form requires the same information submitted in Forms FIN - 3 and FIN - 4. All conditions of "Available Financial Resources Net of CCC ≥ Requirement for the Subject Contract" must be satisfied to qualify.

Form FIN - 5A: For Single Entities

For Single Entities: (A)	Total Available Financial Resources from FIN – 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 4 (C)	Available Financial Resources Net of CCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [*D must be greater than or equal to E*] (F)
_____ (Name of Bidder)				. . . . .	

Form FIN - 5B: For Joint Ventures

For Joint Ventures: (A)	Total Available Financial Resources from FIN – 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 4 (C)	Available Financial Resources Net of CCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [*D must be greater than or equal to E*] (F)
One Partner:					
_____ (Name of Lead Partner)				. . . . .	
Each Partner:					
_____ (Name of Partner 1)				. . . . .	
_____ (Name of Partner 2)				. . . . .	
_____ (Name of Partner 3)				. . . . .	

All partners combined	∑ D = Sum of available financial resources net of current contract commitments for all partners	∑ D = _____	. . . . .	

Note

Form FIN – 5 is made available for use by the bidder as a self-assessment tool, and by the employer as an evaluation work sheet, to determine compliance with the financial resources requirement as stated in 2.3.3. Failure to submit Form FIN - 5 by the Bidder shall not lead to bid rejection.

_____

_____

SEAL AND SIGNATURE OF THE BIDDER

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports.

_____
(Signature of CA/Auditor)
Name of CA/Auditor:_____
Registration No: _____
(Seal)

UDIN No._____

Note:

1. The contents of this Form should be certified by a Chartered Accountant/Auditor (In case bidder or JV Partner is Indian, the Form should be certified by generating Unique Document Identification Number (UDIN) as per Gazette Notification No.1-CA(7)/192/2019 dated 02.08.2019), failing which Employer has right to reject the Bid.

Form EXP – 1: Contracts of Similar Size and Nature

Fill out one (1) form per contract.

The exchange rate to be used to calculate the value of the contract for conversion to a specific currency as specified in Note 7 of EQC and ITB 15.4.

<table>
<tr><th colspan="4">Contract of Similar Size and Nature</th></tr>
<tr><td colspan="4">Contract No.
Name of Work:</td></tr>
<tr><td rowspan="2">Award Date</td><td rowspan="2"></td><td colspan="2">Completion Date</td></tr>
<tr><td>Original Date</td><td>Revised Date (if any)</td></tr>
<tr><td>Total Contract Amount</td><td colspan="3">INR</td></tr>
<tr><td>If partner in a Joint Venture or Subcontractor, specify percentage participation of total contract amount for completed or ongoing work</td><td>Percent participation of total contract</td><td colspan="2">Amount (in INR)</td></tr>
<tr><td>Employer's name
Address
Telephone number
Fax number
E-mail</td><td colspan="3"></td></tr>
<tr><th colspan="4">Description of the Similarity in Accordance with Criterion 2.4.1 of Section 3 (Evaluation and Qualification Criteria)</th></tr>
<tr><td>Details of Similarity in Accordance with Criterion 2.4.1 of Section 3</td><td colspan="3"></td></tr>
</table>

(Signature of Authorised representative of bidder)

Notes:

1. The bidder shall attach a copy of the Certificate(s) issued by the employer in support of the information being furnished in each EXP-1 Form, failing which the claim of the bidder shall be liable to be rejected **(in case of experience as a sub-contractor, the employer shall be the owner of the Project who has engaged the main Contractor).**

2. The experience certificate issued by the Engineer acting on behalf of the employer (owner of the project) shall also be considered provided the documentary evidence establishing the appointment of the said Engineer by the owner of the project shall also be required to be submitted with the bid.

3. As **an** alternative **to the stipulated at 1 & 2 above,** in case of **DBFOT/BOT/BOOT** projects **which are awarded by an owner to a concessionaire, a certificate from the concessionaire certifying the experience of the bidder (Construction contractor) in execution of the work** to whom the execution work is subsequently awarded by the same concessionaire, **can be considered as proof execution of said work by the bidder.** However, such certificate will need to be countersigned by:

a) The owner of the Project who has granted the concession **to the concessionaire**, clearly indicating the name, designation and official address of the signing authority.

Or

b) **An** Engineer appointed by the owner of the project who has granted the concession clearly indicating the name, designation and official address of the signing authority. The document(s) establishing the appointment of the said Engineer **by the owner of the project** shall also be required **to be submitted with the bid**.

4. As an alternate to the stipulation at 1,2 & 3 above alternatively, the following notarized set of documents from the Bidder can be considered to be proof of execution of the said work by the Bidder subject to:

a) Completion Certificate issued by the Concessionaire / Contractor duly certified by Statutory Auditor / Chartered Accountant of the bidder (In case bidder or JV Partner is Indian, the Completion Certificate should be certified by generating Unique Document Identification Number (UDIN) as per Gazette Notification No.1-CA(7)/192/2019 dated 02.08.2019) clearly indicating following shall also be considered:

i. The subsequent award of the work to the bidder by the concessionaire/ Contractor, as the case may be.

Name of work, name of owner/employer, reference of contract agreement number,

ii. Period of execution (from date of start of work- date of completion)

iii. Project details as per eligibility Qualification criteria.

iv. Construction cost as per Concession agreement

v. Actual Construction cost

vi. Quantities of major items of work fulfilling the eligibility criteria, if any

vii. A clear averment to the effect that whether the work was completed/ Taken Over or substantially completed.

However, the Bidder may also submit other documentary evidence duly certified by MD/CEO, full time Director, Partner Authorised to Sign, Proprietor of the firm, to the satisfaction of the

Employer, establishing the technical parameters mentioned in Completion Certificate issued by Concessionaire / Contractor. Certificate from Statutory Auditor /CA in such cases shall not be mandatory.

b) In case the option of this Para 4 is exercised by the bidder, then a documentary evidence establishing the identity of the concessionaire/ contractor by the Employer (owner of the project) shall also be required to be submitted with the bid.

5. The documentation/ information produced/ furnished by the bidder may be subject to verification by the Employer at any stage during the bidding process or during the contract execution. In case of incorrect certification/ information furnished by any bidder, being noticed during such verification, the employer reserves the right to disqualify or take suitable action as per the extant contractual provisions, as the case may be against such bidder. However, the Bidder/Contractor shall not be absolved of the responsibility of submitting the genuine documents and will remain responsible for all the documents submitted even if the Employer do not verify the Documents.

Form EXP - 2: Construction Experience in Key Activities

Fill out one (1) form per contract.

The exchange rate to be used to calculate the value of the contract for conversion to a specific currency as specified in Note- 7 of EQC and ITB 15.4.

Contract of Similar Size and Nature			
Contract No Name of Work:			
Award Date		Completion Date	
		Original Date	Revised Date (if any)
Total Contract Amount	INR		
If partner in a Joint Venture or Subcontractor, specify percentage participation of total contract amount for completed or ongoing work	Percent participation of total contract	Amount (in INR)	
Employer's name **Address** **Telephone number** **Fax number** **E-mail**			
Description of the Similarity in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria)			
Details of Similarity in Accordance with Criterion 2.4.2 of Section 3			

(Signature of Authorised representative of bidder)

Notes:

1. The bidder shall attach a copy of the Certificate(s) issued by the employer in support of the information being furnished in each EXP-2 Form, failing which the claim of the bidder shall be liable to be rejected (in case of experience as a sub-contractor, the employer shall be the owner of the Project who has engaged the main Contractor).

2. The experience certificate issued by the Engineer acting on behalf of the employer (owner of the project) shall also be considered provided the documentary evidence establishing the appointment of the said Engineer by the owner of the project shall also be required to be submitted with the bid.

3. As **an** alternative **to the stipulated at 1 & 2 above,** in case of **DBFOT/BOT/BOOT** projects **which are awarded by an owner to a concessionaire, a certificate from the**

concessionaire certifying the experience of the bidder (Construction contractor) in execution of the work to whom the execution work is subsequently awarded by the same concessionaire, **can be considered as proof execution of said work by the bidder.** However, such certificate will need to be countersigned by:

a) The owner of the Project who has granted the concession **to the concessionaire**, clearly indicating the name, designation and official address of the signing authority.

Or

b) **An** Engineer appointed by the owner of the project who has granted the concession clearly indicating the name, designation and official address of the signing authority. The document(s) establishing the appointment of the said Engineer **by the owner of the project** shall also be required **to be submitted with the bid**.

4. As an alternate to the stipulation at 1,2 & 3 above alternatively, the following notarized set of documents from the Bidder can be considered to be proof of execution of the said work by the Bidder subject to:

a) Completion Certificate issued by the Concessionaire / Contractor duly certified by Statutory Auditor / Chartered Accountant of the bidder (In case bidder or JV Partner is Indian, the Completion Certificate should be certified by generating Unique Document Identification Number (UDIN) as per Gazette Notification No.1-CA(7)/192/2019 dated 02.08.2019) clearly indicating following shall also be considered:

i. The subsequent award of the work to the bidder by the concessionaire/ Contractor, as the case may be

Name of work, name of owner/employer, reference of contract agreement number,

ii. Period of execution (from date of start of work- date of completion)

iii. Project details as per eligibility Qualification criteria.

iv. Construction cost as per Concession agreement

v. Actual Construction cost

vi. Quantities of major items of work fulfilling the eligibility criteria, if any

vii. A clear averment to the effect that whether the work was completed/ Taken Over or substantially completed.

However, the Bidder may also submit other documentary evidence duly certified by MD/CEO, full time Director, Partner Authorized to Sign, Proprietor of the firm, to the satisfaction of the Employer, establishing the technical parameters mentioned in Completion Certificate issued by Concessionaire / Contractor. Certificate from Statutory Auditor /CA in such cases shall not be mandatory.

b) In case the option of this Para 4 is exercised by the bidder, then a documentary evidence establishing the identity of the concessionaire/ contractor by the Employer (owner of the project) shall also be required to be submitted with the bid

5. The documentation/ information produced/ furnished by the bidder shall be subject to verification by the Employer at any stage during the bidding process or during the contract execution. In case of incorrect certification/ information furnished by any bidder, being noticed during such verification, the employer reserves the right to disqualify or take suitable action. However, the Bidder/Contractor shall not be absolved of the responsibility of submitting the

genuine documents and will remain responsible for all the documents submitted even if the Employer do not verify the Documents.

Form ELI-3 – Intended Joint Venture Agreement

[Ref ITB 4.1]

(To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act.)

The Partners of the Joint Venture shall provide Joint Venture Agreement ("Agreement") for Joint Venture Participation in the name of M/s-----of which includes at least the followings: -

M/s_____ having its registered office at _____ (hereinafter referred to as) is the Lead Partner of the Joint Venture and acting as the authorized representative of the Joint Venture on first part; and

M/s_____ having its registered office at _____ (hereinafter referred to as '_____') in the capacity of a Joint Partner of the Joint Venture on the other part; and

M/s_____ having its registered office at _____ (hereinafter referred to as '_____') in the capacity of a Joint Partner of the Joint Venture on the other part; and

The expressions of _____ and _____ and _____ shall wherever the context admits, mean and include their respective legal representatives, successor interest and assigns and shall collectively be referred to as "the Partners" and individually as "the Bidder"

WHEREAS:

(A) National Capital Region Transport Corporation (NCRTC) [hereinafter referred to as "Employer"] has invited bids for _____ "[Insert name of work]", by its bidding documents No. ..... dated .....(the "Bidding Documents")

(B) The Parties are interested in jointly bidding for the Works as members of a Joint Venture and in accordance with the terms and conditions of the Bidding Document in respect of the Works, and

(C) It is a necessary condition under the Bidding Document that the members of the Joint Venture shall enter into a Joint Venture Agreement and furnish a copy thereof with the Bid.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. DEFINITIONS AND INTERPRETATIONS

1.1 In this Agreement, the capitalised terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the Bidding Documents.

1.2 The following documents shall be deemed to form and be read and construed as an integral part of this Agreement.

a) Invitation for bid;
b) Bidding Documents issued by the Employer
c) Any Addendum/Corrigendum to the Bidding Documents issued by the Employer
d) The Bid submitted on our behalf jointly by the Authorized Representative from the Lead Partner of the Joint Venture (JV) .

2. AUTHORIZED REPRESENTATIVE OF THE LEAD PARTNER

2.1 Mr./Ms._____, authorized representative of the Lead Partner and whose details are provided as under, shall be the Authorized Representative of the Joint Venture for all intents and purpose. He / She shall have the authority to conduct all business for and on behalf of any and all the Partners of JV during the bidding process and in the event the JV is awarded the Contract, during Contract execution.

Name,	Designation,	Address	Tel/Fax no	Email ID

3. JOINT VENTURE

3.1 The Parties do hereby irrevocably constitute a joint venture (the "JV") for the purposes of jointly participating in the bidding process for the Project.

3.2 The Parties hereby undertake to participate in the bidding process only through this JV and not individually and/ or through any other JV constituted for this Project, either directly or indirectly.

3.3 The Parties undertake that:

a) The Lead Partner of our JV shall have the majority share amongst the other partners of the JV. The Lead Partner shall have the power of attorney from all Parties for conducting all business for and on behalf of the JV during the bidding process and for performing all its obligations in terms of the Contract;
b) The distribution of responsibilities in execution of Work and the percentage participation amongst various Partners of the JV for the subject work shall be as under:

Sl. No.	Name of the Partner	Role (Lead Partner/ Other Partner)	% Participation	Remarks

4. JOINT AND SEVERAL RESPONSIBILITY

The partners undertake that they shall be jointly and severally liable to the Employer in the discharge of all the obligations and liabilities as per the Contract with the Employer and for the performance of Contract awarded to their JV.

5. DOCUMENTS & CONFIDENTIALLY

Each partner shall maintain in confidence and not use for any purpose other than those related to the Project all commercial and technical information received or generated in the course of preparation and submission of the Bid.

6. VALIDITY

This Agreement shall remain in force till the occurrence of the earliest to occur of the following, unless by mutual consent, the Partners agree in writing to extend the validity for a further period.

a) The bid submitted by the Joint Venture is declared unsuccessful, or
b) Cancellation/ shelving of the project by the employer for any reasons prior to award of Work
c) Execution of detailed Joint Venture agreement by the Partners, setting out detailed terms after award of work by the Employer, substantially covering the requirements as mentioned in Bidding Documents.

7. This Joint Venture shall be constructed under the laws of India.

Signature)	(Signature)	(Signature)
.....	.....	.....

(Name in Block letters of all Executants with Seal of Company)

WITNESS 1.

WITNESS 2.

Form ELI-4: Power of Attorney (POA) for Submitting Bid

(For Single Entity/Sole Bidder. In case, if JV is permitted and Bidder participates in JV, then this Form/POA is required to be filled by each JV Partner in their Individual Capacity)

(To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper to be in the name of the company who is issuing the power of Attorney)

Know all men by these presents, we ..... (name of the Bidder and address of the registered office) 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 on our behalf, all or any of the acts, deeds or things necessary or incidental to the bid for the Contract, including submission of bid, withdrawal, substitution and modification of bid, participating in conferences, responding to queries, submission of information/ documents and generally to represent us in all dealings with National Capital Region Transport Corporation Limited or any other Government Agency or any person, in connection with the bid/Contract for the said work until culmination of the process of bidding till the Contract is entered into with the National Capital Region Transport Corporation Limited and thereafter till the expiry of the Contract.

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

..... (Signature)
(Name, Title and address) of the **Person Accepting the POA.**

..... (Signature)
(Name, Title and address) of the **Person issuing the POA.**

Witness

Witness 1: Name:	Witness 2: Name:
Address:	Address:
Occupation:	Occupation:

Note:

(i) The bidder should submit the notarized Power of Attorney. In case of Foreign Partners, Power of Attorney(s) and Board Resolution, constitution of the legal entity, memorandum & articles of association or other valid legal instruments acceptable to the Employer confirming authority on the persons issuing the Power of Attorney for such actions shall be submitted duly notarized by the notary public of country of origin and should be either stamped by Embassy/High Commission of India in Bidder's Country or Bidders from Partner Countries of Hague convention may submit these documents with "Apostille" stamp.

Also, in case these documents are in foreign language the translation of the same shall be authenticated by Embassy/High Commission of India in Bidder's Country.

(ii) 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 when it is so required the same should be under common seal affixed in accordance with the required procedure.

(iii) The bidder should submit following additional document in support of the POA as case to case basis:

a) In case of Private/Public Companies, a Power of Attorney (POA) from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution shall also be submitted, where applicable. Memorandum & Articles of Association in case of a Public/Private Company.

b) Proprietorship Affidavit in case of Proprietary bidder.

c) Partnership deed in case of partnership bidder.

d) In case of Limited Liability Partnership (LLP), a POA from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution shall also be submitted, where applicable.

Form: ELI-5

POWER OF ATTORNEY TO
LEAD PARTNER AND AUTHORISED REPRESENTATIVE OF JOINT VENTURE (JV)

(To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper to be in the name of the company who is issuing the power of Attorney)

POWER OF ATTORNEY[1]

Whereas National Capital Region Transport Corporation Ltd. limited has invited Bids for the work of

Whereas, the partners of the Joint Venture comprising of M/s. ..., M/s. ....., and M/s. .... are interested in submission of bid for the work of ...*[Insert name of work*]... in accordance with the terms and conditions contained in the bidding documents.

Whereas, it is necessary for the partners of the Joint Venture to designate one of them as the Lead Partner as the authorized representative, with all necessary power and authority to do, for and on behalf of the Joint Venture, all acts, deeds and things as may be necessary in connection with the Joint Ventures bid for the project.

NOW THIS POWER OF ATTORNEY WITNESSETH THAT:

We, M/s. ..... (Lead Partner), M/s_____,..... and M/s_____ hereby designate M/s. ....., being one of the partners of the Joint Venture, as the lead partner of the Joint Venture and designate Mr./Ms. _____ being authorized representative of the Joint Venture, to do on behalf of the Joint Venture, all or any of the acts, deeds or things necessary or incidental to the bid for the Contract, including submission of bid, withdrawal, substitution and modification of bid, participating in conferences, responding to queries, submission of information/ documents and generally to represent us in all dealings with National Capital Region Transport Corporation Limited or any other Government Agency or any person, in connection with the bid/Contract for the said work until culmination of the process of bidding till the contract agreement is entered into with the National Capital Region Transport Corporation Limited and thereafter till the expiry of the Contract.

We hereby agree to ratify all acts, deeds and things lawfully done by lead partner, our said attorney, pursuant to this power of attorney and that all acts deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us/ Joint Venture.

Dated this the ..... Day of ..... 20.....

..... (Signature)
(Name, Title and address) of the **Person Accepting the POA.**

(Signature)	(Signature)	(Signature)
.....	.....	.....

(Name in Block letters of all authorized representative of each JV member with Seal of Company)

Witness 1: Name: Address: Occupation:	Witness 2: Name: Address: Occupation:

**Notes:*

i. The bidder should submit the notarized Power of Attorney. In case of Foreign Partners, Power of Attorney(s) and Board Resolution, constitution of the legal entity, memorandum & articles of association or other valid legal instruments acceptable to the Employer confirming authority on the persons issuing the Power of Attorney for such actions shall be submitted duly notarized by the notary public of country of origin and should be either stamped by Embassy/High Commission of India in Bidder's Country or Bidders from Partner Countries of Hague convention may submit these documents with "Apostille" stamp.

ii. 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 when it is so required the same should be under common seal affixed in accordance with the required procedure.

iii. The bidder should submit following additional document in support of the POA as case to case basis:

a) In case of Private/Public Companies, a Power of Attorney (POA) from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution shall also be submitted, where applicable. Memorandum & Articles of Association in case of a Public/Private Company.

b) Proprietorship Affidavit in case of Proprietary bidder.

c) Partnership deed in case of partnership bidder.

d) In case of Limited Liability partnership (LLP), a POA from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution shall also be submitted, where applicable.

Form: UT-1

UNDERTAKING FROM SPECIALIST SUB-CONTRACTOR

(Refer Clause 2.4.2 of EQC)

(On the Letterhead of specialist sub-consultant)

I/We,.....(Name of Specialist Subconsultant) hereby confirm that we are associating with .....(Name of the bidder) for the work of .....(Name of work as stated in Invitation for Bids {IFB}), for the key activity stated in clause 2.4.2 of EQC.

I/We,.....(Name of Specialist Subconsultant) hereby confirm that I/We fulfil the criteria mentioned 2.4.2 of EQC. The Copy of the certificate issued by the Employer in support of fulfilment of criteria mentioned in clause 2.4.2 of EQC is enclosed.

I/We hereby undertake that in case M/s.....(Name of the bidder) are awarded the work of .....(Name of work as stated in Invitation for Bids {IFB}),the key activity stated in clause 2.4.2 of EQC shall be undertaken by us as per bid conditions.

STAMP & SIGNATURE OF AUTHORISED
SIGNATORY OF SPECIALIST SUB CONSULTANT

STAMP & SIGNATURE OF AUTHORISED
SIGNATORY OF BIDDER

(on Bidder's letter head)

Form: UT-2

UNDERTAKING FOR RESTRICTIONS UNDER RULE 144(xi) OF THE GENERAL FINANCIAL RULES (GFRs)-2017 AS ISSUED BY LETTER NUMBER F.7/10/2021-PPD(1) DATED 23.02.2023 OF PROCUREMENT POLICY DIVISION, DEPARTMENT OF EXPENDITURE (DOE) UNDER MINISTRY OF FINANCE, GOVERNMENT OF INDIA OR ANY SUBSEQUENT AMENDMENT ON THE SUBJECT MATTER ISSUED BY GOVERNMENT OF INDIA TILL DEADLINE FOR BID SUBMISSION

We .....have read the Orders of Government of India mentioned in ITB Clause 4.2 (a) regarding restrictions on procurement under Rule 144(xi) of the General Financial Rules We hereby certify that we fulfil all the requirements under Orders of Government of India mentioned in ITB Clause 4.2 (a) and are eligible to be considered as follows:

i. We come under the details of bidder who are required to be registered with Competent Authority as per para 2 & 3 of the orders of Government of India mentioned in ITB Clause 4.2 (a) and are registered with Competent Authority vide registration no..... valid upto ..... (attached with this form)

ii. We do not come under the details of bidder who are required to be registered with Competent Authority as per para 2 & 3 of the orders of Government of India mentioned in ITB Clause 4.2 (a)

(Strike out (i) or (ii) whichever is not applicable. In case of (i), registration should be valid at the time of submission of bids and at the time of acceptance of bids)

We also undertake that we shall not sub-contract any work to an entity who comes under the details of bidder who are required to be registered with Competent Authority as per para 2 & 3 of the orders of Government of India mentioned in ITB Clause 4.2 (a), unless such entity(ies) are registered with Competent Authority.

We further undertake that in case the work is awarded to us and at any point of time before completion of the work, if we cease to comply the orders mentioned herein above, we are bound to notify the same to the Employer as soon as possible but not later than 28 days of such change in status.

STAMP & SIGNATURE OF AUTHORISED SIGNATORY

- To be submitted along with the Technical Bid separately by sole entity/ each JV partner/ any specialist subcontractor being the part of the Bidder.
- To be submitted by any/all proposed Sub-Contractor(s) duly signed by Contractor, with the proposal of Contractor for approval of any/all such proposed Sub-Contractor(s), during execution of the Contract.

Form: UT-3

DELETED

Form: UT -3A

DELETED

Form: UT -4

CERTIFICATION FOR LOCAL CONTENT

It is certified that we M/s _____ , the Statutory Auditor or Cost Auditor of the Company *(in the case of company)* or from a practicing cost accountant or chartered accountant *(in case of other than company),* M/s _____ (name of the Bidder) who have informed us that they are submitting their Bid to NCRTC for the work of:

Bid No. & Name of Work: _____

We certify that the M/s _____ fulfills to qualify as Class-I / Class-II local Supplier or Service Provider *(Strike out whichever is not applicable)* **in terms of Public Procurement (Preference to Make in India), Order 2017 as mentioned in clause 36.1 of BDS.**

M/s_____ meet _____% of Local Content for _____to be supplied against **Bid No. _____** of NCRTC.

Seal and Signature of the
Statutory Auditor or Cost Auditor/
Practicing Cost Accountant or Chartered Accountant
of M/s_____
UDIN No._____

Note:

1. *In case of Single Entity, Form UT-4 shall be submitted by Bidder in the name of Bidder (as mentioned in Form ELI-1 of the Bidding Form).*

2. ***In case of Joint Venture (JV)***

   Option-1: *If Form UT-4 is submitted by Bidder in the name of Bidder (i.e., in the name of JV) as mentioned in Form ELI-1 of the Bidding Form. The Percentage of local content of the bidder (i.e. of JV) as mentioned in the Form UT-4 will be considered.*

   Option-2: *If Form UT-4 is submitted by each JV Partner separately, the percentage of Local Content of the bidder (i.e. of JV) shall be calculated on weighted average as per the percentage participation of the partners in the bid as provided in 'Form ELI-3: Intended Joint Venture Agreement' of the Bidding Form.*

FORM UT-5

UNDERTAKING FOR ENCASHMENT/FORFEITURE OF BID SECURITY

(Refer Clause 19.9 of ITB)

We,.....(Name of JV) hereby confirm that Bid Security submitted for the contract ..... (Contract No) in the name of ..... (name of the partner on whose name Bid Security is submitted) is on behalf of .....(Name of the JV).

We also undertake that in the event of encashment/forfeiture of Bid Security by the Employer in terms of bid provisions, none of the constituents partners of .....(Name of JV) will have any objection for the same.

Signature of Authorized Signatory of Bidder with Seal

Note:

1. The undertaking is to be submitted in case the bid security is submitted in the name of any Partner of JV.

FORM UT-6

UNDERTAKING FOR GENUINESS OF DOCUMENTS SUBMITTED/ UPLOADED BY THE BIDDER ALONGWITH THE BID SUBMISSION

(To be submitted on the letterhead of the bidder)

I..... (Name and designation) appointed as the attorney/ authorised signatory of the bidder,
M/s ..... (hereinafter called the bidder) for the purpose of the Bid documents for the work of ..... as per the bid no. ..... of NCRTC, do hereby solemnly affirm and state on the behalf of the bidder including its constituents as under:

1. I/we the bidder (s) am/are signing this document after carefully reading the contents.
2. I/we the bidder (s) also accept all the conditions of the bid and have signed all the pages in confirmation thereof.
3. I/we declare and certify that I/we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.
4. I/we also understand that my/our offer will be evaluated based on the documents/ credentials submitted along with the offer and same shall be binding upon me/us.
5. I/we declare that the information and documents submitted along with the bid by me/us are correct and I/we are fully responsible for the correctness of the information and documents submitted by us.
6. I/ We understand that in case it is found during the evaluation or at any time before signing of the Contract or after its execution and during the period of subsistence thereof, that we have made material misrepresentation or has given any materially incorrect or false information, then remedial actions shall be taken against us in accordance with the provisions mentioned in the bid document.

SEAL AND SIGNATURE OF
AUTHORISED SIGNATORY OF THE BIDDER

PLACE:
DATE:

Form: PQ

STANDARD FORMAT FOR PRE-BID QUERIES

Contract No. and Name of the Work:

Name of Bidder:

S.No.	Relevant Section/Clause No. and complete description of clause	Relevant Page No. of Bidding Document	Queries	Replies (To be filled by NCRTC)

(Signature of Authorised representative of bidder)

Section 5: Nationality

Bidder shall have nationality in accordance with ITB 4.2.

PART-II
(REQUIREMENTS)

Section 6

Section 6 A: NA

Section 6 B: Technical Specification

Section 6 C: SHE Conditions of Contract

Section 6 D: Reference Documents (Bid drawings etc.)

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
(A Joint Venture Govt. of India and participating State Govts.)
Gatishakti Bhawan, INA New Delhi – 110023
Addendum & Corrigendum No.-02 dated 16-09-2026

Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC.

S No.	Bidding Document Part/Section/Clauses No.	Existing Document/Form/Clause/Subclause	Modified clause Document/Form/Clause/Subclause
1	Part I: Bidding Procedures Notice for Invitation of Bids (IFB), Para 1.2 (a) Bid Security	(i) Amount of Bid Security: INR 31.25 lakhs (ii) Validity of Bid Security in case of Bank Guarantee (BG)/ Date of Maturity in case of FDR: 22.03.2027 (180 days from last date of Submission). Bid Security (BG, Demand Draft, Banker's Cheque and FDR) in original as per clause 19 of BDS shall be accepted only up to 1500 hrs. on 22.09.2026 (One day prior to last date of submission) in the office of the Employer at the address mentioned hereinafter. The bidder must submit the bid security (original) in physical form and shall upload the scanned copies of bid security in their online bid.	(i) Amount of Bid Security: INR 31.25 lakhs (ii) Validity of Bid Security in case of Bank Guarantee (BG)/ Date of Maturity in case of FDR: **29.03.2027** (180 days from last date of Submission). Bid Security (BG, Demand Draft, Banker's Cheque and FDR) in original as per clause 19 of BDS shall be accepted only up to 1500 hrs. on **30.09.2026 (One day prior to date of opening)** in the office of the Employer at the address mentioned hereinafter. The bidder must submit the bid security (original) in physical form and shall upload the scanned copies of bid security in their online bid. **In case Bid Security is submitted in the form of e-mode i.e. RTGS/NEFT/ECS/IMPS then bidder shall remit the same in below mentioned Bank details and submit the proof of transaction (Bank Statement/transaction snapshot) including UTR number/Transaction number along with online bid submission. Bank Details (For RTGS/NEFT/ECS/IMPS):** **Bank Name- HDFC Bank** **Account no.- 50200029737870** **IFSC code- HDFC0000482** **Bank Branch-14, Anand Lok, New Delhi-110049**

2	Part I: Bidding Procedures Invitation of Bids (IFB), Para 1.2 (Bid Schedule/ Details) (c), (h) & (i)	**(c) Availability of Bid Document** From 12.08.2026 to 23.09.2026 (Up to 1500 Hrs.) on e-procurement portal as mentioned in clause 1.2 (k) of IFB (Bid Schedule/Details). **(h) Date and time of submission of Online Bid** Bid submission start date: 18.09.2026 from 1500 Hrs. Bid submission end date: 23.09.2026 up to 1500 Hrs. **(i) Date & Time of opening of Bid (Technical Bid only)** 24.09.2026 at 1500 Hrs.	**(c) Availability of Bid Document** **From 12.08.2026 to 30.09.2026 (Up to 1500 Hrs.)** on e-procurement portal as mentioned in clause 1.2 (k) of IFB (Bid Schedule/Details). **(h) Date and time of submission of Online Bid** Bid submission start date: **25.09.2026 from 1500 Hrs**. Bid submission end date: **30.09.2026 up to 1500 Hrs.** **(i) Date & Time of opening of Bid (Technical Bid only)** **01.10.2026 at 1500 Hrs.**

Appendix A to PCC (Part-B)

The fee structure of Conciliator/Conciliator Forum is detailed as follows:

S.N	Particulars	Amount of Dispute		Fee Structure
1.	Conciliation Fee	**A. Per Sitting Payment:**		
		S. No.	Amount of dispute	Charges - per Conciliator *#
		i)	Up to Rs 10 Cr.	Rs. 15,000
		ii)	Above Rs 10 Cr.	Rs. 25,000
		B. Ceiling Limit of Sitting charges:		
		S. No.	Amount of dispute	Ceiling limit of sitting charges per Conciliator
		i)	Up to Rs 10 Cr.	Rs. 75,000
		ii)	Above Rs 10 Cr. & upto Rs 100 Cr.	Rs. 1,25,000
		iii)	Above Rs 100 Cr.	Rs 1,75,000
2.	Reading Charges/ Studying of Documents	S. No.	Amount of dispute	Charges- per Conciliator
		i)	Up to Rs 10 Cr.	Rs. 50,000
		ii)	Above Rs. 10 Cr & upto Rs. 100 Cr	Rs. 60,000
		iii)	Above Rs 100 Cr.	Rs. 75,000
3.	**Secretarial Assistance & Incidental Charges	S. No	Amount of dispute	Charges
		i)	Up to Rs 10 Cr.	Rs. 10,000
		ii)	Above Rs. 10 Cr & upto Rs. 100 Cr.	Rs. 20,000
		iii)	Above Rs 100 Cr.	Rs. 30,000
4.	Charges for publishing Settlement Agreement (On signing of Agreement by both the parties)	S. No.	Amount of dispute	Charges- per Conciliator
		i)	Up to Rs 10 Cr.	Rs. 50,000
		ii)	Above Rs. 10 Cr & upto Rs. 100 Cr	Rs. 1,00,000
		iii)	Above Rs 100 Cr.	Rs. 1,50,000

Note:

a) *# Sole Conciliator for dispute upto Rs 10 Crore and three-member Conciliator for dispute above Rs 10 Crore.

b) ** In case of 3-member conciliator forum, Secretarial Assistance and Incidental Charges shall be given to the Presiding Conciliator.

Estimate for the work of "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC"

S.No.	Description	Unit	Quantity	Rate(Excl GS	Amount(Excl GS
1A	Design, Supplying Installation, Testing and Commissioning of LED RGB/RGBWW/RGBNW/ RGBA/ RGBW (as per site requirement) Linear Profile / Wall Washer/ Projector light/ Spot Light luminaire for Facade lighting with aluminium extruded/ Die Cast housing with driver (the Cost of the required driver(s) shall be included in this line item) of following wattage as given below. The luminaire bracket (If required) shall be made of cold-rolled steel & shall be so designed that the luminaire can be tilted up to ±90°, having the rotation degrees scale shall be provided. The luminaire shall be IP66 protection also having silicon gasket between optical cover & LED chamber to ensure proper IP66 protection. CRI>80, SDCM<5, THD<10%. as per IEC 61000-3-2, under voltage, over voltage protection, driver inbuilt surge protection of 4KV and external surge protection (SPD) of 10 KV common mode/differential mode, Driver Efficiency>85%, EMI/EMC as per CISPR-15(the parameter to be complied shall be as per the requirement and will be finalized during the design stage). There should be options of beam angles of 10/20/30/40/60(exact degree shall be finalized as per site requirement during design stage) asymmetric degree. Luminaire should have efficacy of minimum 40 lm/W for RGB/ RGBNW/ RGBWW/TNW and 65 lm/W for mono colour options. Luminaire shall be capable of producing dynamic colour changing light for with 16 million colours by DMX/Ethernet based control. The beam angle of the fitting shall be narrow, medium, wide or asymmetric as per the requirement. Luminaire shall be complete with replaceable driver and capable of operating at line voltage without any separate power supply from 100-270 V AC, 50 Hz with power factor > 0.9. Fixture shall be suitable to operate at an ambient temperature range of -10°C to +50°C and shall have impact resistance of IK 07. Lifetime of complete luminaire (LED ,Driver , Electrical & control circuitry) shall be at least L70:50000 burning hours at 50°C. Luminaire shall be conforming to BIS (IS 10322) with dully R Number marked and shall be complete with all necessary accessories required for proper working of fixture including connection/inter connection with weather proof ISI Marked copper conductor of minimum size 1.5sqmm connection cables and accessories , prewired Integral male/female water proof connectors of min IP-67. The successful bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79 report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer, Rohs Compliance, along with CE/ BIS certificate for following type of lights [Application: For Piers/Columns, Steel Portal/ Longitudinal Louvers] The contractor shall install the sample/mock-up at site during the design stage for review and approval by Employer (NCRTC).				
1A (i)	50Wattage (Range of wattage 45W ≤Wattage ≤ 50, i.e. range equal and above 45W and equal & less than 50W) for Piers/Columns and Steel Portal	No.	787	45644	35921828
1A (ii)	40W RGB (Range of wattage 36W ≤ Wattage < 45, i.e. range equal and above 36W and less than 45W) for Longitudinal Louvers	No.	620	44644	27679280
1B	Pixel dot LED light : for longitudinal façade towards ring road side and Nizamuddin Railway station side on the gap between the existing louvres (the gap is around 2 meter) or at any location at station, create uniformity effect. The contractor shall install the sample (mock-up) at site during the design stage for review and approval by Employer (NCRTC). Dot pixel LED shall have meet following requirements as a minimum:- Design,Supply, Installation & commissioning of intelligent direct-view LED media façade complete with all luminaires, mounting accessories/Supporting Structure in the gap inter connection cables, connectors, power supplies/SMPS/ Drivers, Control equipment, software, and ancillary components required for operation of system. The luminaire shall consist of compact direct-view LED nodes arranged in maximum 50mm pitch (center-to-center) pixel spacing, utilizing high-efficiency low-power LEDs available in RGBW. Each node shall be housed in a fire retardant polycarbonate (PC) enclosure with anti-aging, UV-resistant optical covers. The fixture shall be suitable for track-mounted or surface-mounted installation, with a minimum protection rating of IP-66/IP-67 and IK-06. The luminaire shall provide a minimum output of 36 lumens per node for RGBW versions and upto 85 lumens per node for white versions, depending on optical configuration, with a rated life time of not less than 50,000 hours (L70 B50 at 35°C). The system shall support DMX 512 control with individual pixel control, smooth digital dimming, dynamic color-changing capabilities, and integration in to intelligent façade lighting systems. Pre-wired Male and female connectors (with IP-67 rating) shall be provided for through-wiring of power and data. The luminaire shall be suitable for operation in ambient temperatures ranging from -10°C to +55°C. The manufacturer shall provide complete technical documentation, photometric data, wiring diagrams, installation instructions, and compliance certificates, and the product shall be certified to CE/BIS requirements or equivalent international standards.	sqm	678	79285	53755230
2	Design, Supply, Installation, Testing & Commissioning of an IP 65 Image projector CE certified. allowing images, pattern projections. The image projectors extraordinary quality of output should be controlled by the advanced DMX control system like DMX control suite etc which can control light distribution and visual appeal of light output with Adjustable beam angles of 15°,25°,30° the projection focus, should be adjusted by the control suite. The projector wattage should be 200W image projector with a lumen output of 12000lm at the CCT of 8000K with 16 bit dimming setup, with 4 stencils for image creation, control protocol of DMX 512 with a 3channel DMX configuration. Degree of ingress protection, shock rated protection shall be IP65 respectively. Housing: high quality aluminium alloy with matt black/ grey finish with a possibility of custom color finishes. Front Cover shall be air tempered flat glass, 4 mm thick optical lenses set: clear glass with an anti-reflection coating. Input voltage shall be 100-240 V / 50-60 Hz, Drive current 4A. M19 cable for power input ,3 pin male/female, and M16 cable for DMX input , 2 pin male/female. Operating temperature range of projector shall be -20°C to +50°C. The other parameters shall be provided in line to the specifications & installation, stencils for dynamic and static effects shall be provided as per site requirements & as per direction engineer-in charge complete in all respect. Also consider pole upto 7 mtr for mounting of GOBO as per site conditions.	No.	4	1349985	5399940

3	Controller Design, Supplying Installation, Testing and Commissioning of DMX Controller for the system including address writer and programming the DMX controller with the suitable designs/Themes as many as required by the Engineer-in-charge/Employer (NCRTC) and all other accessories required for the running of the system. Output Protocol DMX512 with min 8x 2 universe should work in Stand Alone Mode and min 2 universe should work in live mode with laptop/ tablet/computer. It should be compatible for Programmability with PC, Mac, Tablet, Smartphone by using USB & Ethernet. DMX controller should have network controllability feature to control the scene remotely through LAN and triggered via UDP packets on port 4096 (512x 8) x 2. There should be provision for Memory micro SD card. Device should have Intuitive backlit keyboard with 10 presents and also have provision of keypad on device for changing scene manually from device. Device should be capable to work on Extended triggering possibilities (TCA) & also have Smart Upgrade Technology (SUT). It is an IP 20 unit and has an Operating Temperature of 0°C to 50°C. OS (Operating System) requirements for the controller is Mac OS X 10.8-10.12, Windows 7/8/10/11. Standards should be EC, EMC, ROHS. The controller should have a variety of features including 4096 x 2 DMX channels, clock/calendar, iPhone/iPad /Android remote control, Ethernet facilities, dry contact port triggering and multi-zone SD card memory. Network synchronization of one area across hundreds of universes with the possibility of 99 scenes across 5 areas with auto clock triggering for sunrise and sunset and as per the festivals for specific occasions. Device should be equipped with metal clamp to mount on wall/rack with data enablers and splitters as required. To be provided with IP 66 enclosure if installed in external environment.	Each	4	548995	2195980
4	Splitter				
4.1	Splitter Design, Supplying Installation, Testing and Commissioning of DMX Splitter with Input Voltage range : 190-240V AC, Power Consumption 5W max. Housing is made of CRCA/ Aluminium with powder coated finish Mounting, 19 inch rack mountable, Operation Temperature - 10°C to +55°C, 8 Output with 3pin XLR terminal sockets, Ingress Protection Rating IP-67. This unit takes the DMX Signal from DMX Controller & split the signal into 8 separate output channels. The output terminals of Splitters are optically isolated from the input. Splitters should be capable to amplify the DMX signal & allowing the data link to be extended by max. 300 m (1044 ft.) using AWG 22 DMX cable or 150 m (500 ft.) using AWG 24 DMX cable or maximum 20-25 fixture per output channel. To be provided with IP-66 enclosure if installed in external environment etc., complete as required	Each	8	95095	760760
4.2	Splitter Supplying Installation, Testing and Commissioning of RDM-6 Wall Splitter, should be able to provide 6- output DMX/RDM splitter with DMX/RDM pass through supporting bi-directional communications for discovery, addressing and DMX control of Ethernet/DMX products. This unit takes the incoming DMX/RDM signal and splits the signal into six separate output channels allowing for expanding the number of devices controlled from 32 to 6x32. The output terminals are electronically isolated from the input & RDM-through port and share a common ground reference. All six output ports have an independent output driver to boost the DMX/RDM signal. Surface or DIN-rail mountable, Isolated DMX/RDM Input/Outputs, Automatic switching between DMX and RDM mode for auto-discovery, Environment-IP-66, Interior applications, Finish/Color-Polycarbonate, Certification: CE Certified. DMX Splitter/Booster etc. as required.	Each	8	95095	760760
5	Signal Amplifier Supplying Installation, Testing and Commissioning of Signal Amplifier to boost the Signal, IP 66/IP-67 rated module to enhance the depleting DMX Signals, should have IP 66 rates in-built connectors compatible with Luminaires. It should be offered with in-built electronic circuit for functioning. No external LED driver needed etc., complete as required.	Each	4	80690	322760
6	DMX decoder Supplying, installation, testing and commissioning of high quality DMX decoder, Power Input : DC 24V etc complete as required (Required by Neo Flex or LED strip light LED so not required)	Each	2	32650	65300
7	Connector Supplying and Fixing of IP67 "I" power prewired (1 m length wire) connectors having 3/4 pole cable connector, chuck type strain relief, Current rating 20A rms continuous, Easy and extremely precise locking system "Quick Lock" High impact materials - long-lasting and reliable etc complete as required	Each	50	5775	288750
8	Connector Supplying and Fixing of IP67 "I" DMX prewired (300mm length of wire) connectors having 3/5 pole cable connector, Male/Female connector with improved latch, cage type contacts, "solder stop" for easy soldering, and additional ground contact for best contact integrity between chassis and cable connector. More durable housing for maximum reliability, etc complete as required	Each	1060	2425	2570500
9	Connector Supplying and Fixing of 5 pin XLR Male/ Female prewired connectors having 5 pole cable connector, Male/Female connector with improved latch, cage type contacts, "solder stop" for easy soldering, and additional ground contact for best contact integrity between chassis and cable connector. More durable housing for maximum reliability etc as required	Each	50	14470	723500
10	Processor Supplying Installation Testing and Commissioning of push button type keypad with upto 10 buttons. Each button is programmable up to 16 scenarios. Also has got two dry-contact input to trigger any preset scene, etc as required	Each	2	423350	846700
11	Supply, laying, testing and commissioning of 22/24 AWG shielded twisted pair cable used for RS- 485 (9841) DMX network, data rate minimum 10mbps, conductor material copper or copper -clad, impedance 120 ohms, suitable -20 dig C to 55Deg C.	Meter	2150	490	1053500
12	Supply & laying of wiring for the following light point with 3 core x 2.5 sqmm, 1100 Volt grade PVC insulated FR copper conductor flexible cable in raceway/Cable tray /heavy gauge GI conduit surface run with GI saddles, or concealed or in MS raceway including chases and complete with GI junction boxes, pull boxes, inspection boxes, bends & other accessories etc including insulated Protective Earth (PE) conductor and earthing excluding the cost of MCB as specified and as under: (Note: Existing cable tray may be used wherever available with due approval from Employer (NCRTC), if additional raceway or cable tray required in the route then the same shall be provided without any extra cost)				
12.1	One point controlled by 10A MCB.	No.	100	462.5	46250

12.2	Secondary or looping points wiring as specified 1A & 1B above using 3 core x 2.5 sqmm insulated copper (P+N+PE) flexible cable in MS raceway, Cable tray or heavy gauge GI Conduit for lights on Platform outlets including providing terminal block, ceiling rose & other accessories etc as required Including the cost of switches, sockets & switch boxes) as per specifications and drawings as required, (Note: Existing cable tray may be used wherever available with due approval from Employer (NCRTC), if additional raceway or cable tray required in the route then the same shall be provided without any extra cost)	No.		1185	350.5	415342.5
13	Distribution Board for Power Supply to Controller and Lighting work Incoming 1 Number 63 Amps FP feeder each having one number 3 phase 415 Volts, 50 Hz, 10 KA front operated 63 Amps.FP MCB. 0-24 Hrs astronomical timer with suitable rating contactor for auto ON/Off Extn Lighting. 3 nos. 40A DP MCB ELCB/RCCB with Sensitivity of 30mA. Outgoing 54 Nos.6A~20 A SP MCB spreaded in three rows (Bidder to check and mention as per their requirement) Bus bars 1 set of 415 V 3 phase 4 wire, 50 HZ Colour coded copper bus bars. Neutral Link Suitable for all outgoings. Earthing Terminals. Earthing terminals suitable for all outgoing.	No.		4	92575	370300
14	Supply, laying, testing and commissioning of 1100 V grade, armoured, FRLS, XLPE, Aluminium (Al) Conductor cables on existing trays/ walls/ columns /indoor /trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of proper dressing of cables, markers providing identification tags, earthing of glands armouring etc. complete as per specifications, as required and as below. (Laying Cables from Main Distribution Panel (Power Source point provided by Employer placed at ASS: Auxiliary Substation at Concourse level) to Contractor supplied Light Distribution board. Termination at both end shall be done by Contractor with due permission of Employer or its representatives.					
14.1	4 core 25 sq mm Al Conductor	Meter		250	547.5	136875
14.2	4 core 16 sq mm Al Conductor	Meter		250	473	118250
15	Cable jointing and termination of cable as per item 14.1 - including cost of Supplying and fixing, Crimping lugs, double compression brass glands, insulation tape etc. complete as per specifications and as required. One number means termination of both side of cable					
15.1	4 core 25 sq mm Al Conductor	No		4	302.5	1210
15.2	4 core 16 sq mm Al Conductor	No.		4	258.5	1034
16	Supply and laying, Testing and commissioning of copper/GI Strips/wire for interconnecting the earthing stations, panels, DBs etc. of the following sizes in-built up trenches /surface/wall/ground complete with holes & fixing, jointing / terminating accessories as per specifications & drawing as required. (Quantity shall be paid as per the actual measurement as executed, however direct measurement shall not exceed the quantity indicated in drawing approved)					
16.1	50 mm x 6 mm GI strip	Meter		12	367.5	4410
16.2	25 mm X 6 mm GI strip	Meter		499	173.5	86576.5
17	SITC of GI strip of size 20x5 mm (Width xThickness), if required at site. (Note: Rates for mounting arrangement of GI/Aluminium Support Structure for LED Light/dot pixel as per the contractor's design shall be included in the above prices in item 1A & 1B and 2)	Meter		200	1157.5	231500
	Subtotal					133756536
	Cost for 1st years CAMC after 2-years DLP	Year		1	4360759	4360759
	Cost for 2nd years CAMC after 2-years DLP	Year		1	7971517.5	7971517.5
	Cost for 3rd years CAMC after 2-years DLP	Year		1	10151897	10151897
	Total for 3 years CAMC after 2-years DLP					22484173.5
	Payment Terms	Percentage				
	On submission of design:	0.03	#REF!			
	On approval of design:	0.02	#REF!			
	Supply of Material at site	0.6	#REF!			
	Installation, Testing & Commissioning	0.25	#REF!			
	After 1 year of 2 year DLP	0.05	#REF!			
	On Completion of 2 year DLP	0.05	#REF!			
		1	#REF!			
	Total Including 3 Yearrs AMC					156240709.5

GENERAL EXEMPTION NO. 128

Exemption to Imports by U.N. or International Organisation for execution of projects in India - [Notfn. No. 84/97-Cus. dt. 11.11.97 as amended by Notfn. Nos. 85/99, 119/99, 75/01, 107/01 and 24/08, 22/14, 44/17].

In exercise of the powers conferred by sub-section (1) of section 25 of the Customs Act, 1962 (52 of 1962), read with sub-section (4) of section 68 of the Finance (No.2) Act, 1996 (33 of 1996), the Central Government, being satisfied that it is necessary in the public interest so to do, hereby exempts all the goods imported into India for execution of **projects financed by the United Nations or an international organisation** and approved by the Government of India, from the **whole of the duty of customs** leviable thereon under First Schedule to the customs Tariff Act, 1975 (51 of 1975), and the whole of the **special duty of customs** leviable under section 68 of the Finance (No.2) Act 1996 (33 of 1996):

Provided that the importer, at the time of clearance of the goods, produces before the Assistant Commissioner of Customs or Deputy commissioner of Customs, as the case may be, having jurisdiction,-

(i) in case the said goods are -

(a) **imported by an international organisation** listed in the Annexure appended to this notification and intended to be **used in a project** that has been **approved by the Government of India and financed (whether by a loan or a grant) by such an organisation**, a certificate from such organisation that the said **goods are required for the execution of the said project** and that the said project has duly been approved by the Government of India; or

(b) **imported for use in a project** that has been **approved by the Government of India** and **financed** (whether by a loan or a grant) **by an international organisation listed in the said Annexure**, a certificate from an officer not below the rank of **Deputy Secretary** to the Government of India, in the **Ministry of Finance** (Department of Economic Affairs) that the said **goods are required for the execution of the said project** and that the said **project** has duly been **approved by the Government of India;**

(ii) in case the said goods are intended to be used in a project financed (whether by a loan or a grant) by the **World Bank, the Asian Development Bank or any international organisation**, other than those listed in the Annexure and the said project has been **approved by the Government of India**, a certificate from the **executive head of the Project** Implementing Authority and countersigned by an officer not below the rank of a **Joint Secretary** to the Government of India, **in the concerned Line Ministry** in the Government of India, that the said goods are required for the execution of the said project and that the said project has duly been approved by the Government of India, and

(iii) in case the said goods are intended to be used in a project financed (whether by a loan or a grant) by the World Bank, the Asian Development Bank or any international organisation other than those listed in the Annexure and the said project has been approved by the Government of India for implementation by the Government of a State or a Union Territory, a certificate from the **executive head of the Project Implementing Authority and countersigned by the Principal Secretary or the Secretary (Finance)**, as the case may be, in the concerned State Government or the Union Territory, that the said goods are required for the execution of the said project, and that the said project has duly been **approved by the Government of India for implementation by the concerned State Government.**

2. Where the goods are imported prior to the 1st March, 2008, the importer may-

(a) transfer the goods to a new project subject to the condition that the importer produces before

the Assistant Commissioner of Customs or Deputy Commissioner of Customs, as the case may be, having jurisdiction over the port of import, a certificate from the officer concerned of the Central Government, State Government or Union territory Administration, as the case may be, that the goods are no longer required for the project and a declaration from the United Nations, the World Bank, the Asian Development Bank or any other international organization listed in the Annexure to the said notification that the said goods are required for the said new project which has duly been approved by the Government of India; or

(b) re-export the goods when the goods are no longer required for the existing project subject to the condition that the identity of the goods is established and no export incentive is claimed against such re-export; or

(c) pay the duty of customs which would have been payable but for the exemption contained herein on the depreciated value of the goods subject to the condition that the importer produces before the Assistant Commissioner of Customs or Deputy Commissioner of Customs, as the case may be, having jurisdiction over the port of import, a certificate from the officer concerned of the Central Government, State Government or Union territory Administration, as the case may be, that the goods are no longer required for the project. The depreciated value of the goods shall be equal to the original value of the goods at the time of import reduced by the percentage points calculated by straight line method as specified below for each quarter of a year or part thereof from the date of clearance of the goods, namely:-

(i) for each quarter in the first year at the rate of 4 per cent;
(ii) for each quarter in the second year at the rate of 3 per cent;
(iii) for each quarter in the third year at the rate of 2.5 per cent; and
(iv) for each quarter in the fourth year and subsequent years at the rate of 2 per cent, subject to the maximum of 70%.

Explanation 1 - For the purposes of this notification,-

(a) *"international organisation"* means an international organisation to which the Central Government has declared, in pursuance of section 3 of the United Nations (Privileges and Immunities) Act, 1947 (46 of 1947), that the provisions of the Schedule to the said act shall apply;

(b) *"Line Ministry"* means a Ministry in the Government of India, which has been so nominated with respect to a project, by the Government of India, in the Ministry of Finance (Department of Economic Affairs).

Explanation 2 - For the removal of doubts, it is herebyclarified that the benefit under this notification, in the case of goods supplied to the projects financed by the United Nations or an international organisation, is available when the goods brought into the project are not withdrawn by the supplier or contractor and the expression " goods are required for the execution of the project" shall be construed accordingly.

** Corrigendum vide F.No.605/187/2001-DBK dt.22.10.01.*

ANNEXURE

1. United Nations Development Programme,
2. United Nations International Childrens' Fund,
3. Food and Agricultural Organisation,
4. International Labour Organisation,
5. World Health Organisation
6. United Nations Population Fund.
7. United Nations World Food Programme
8. United Nations Industrial Development Organisation

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED

Bid No. DM/EL/COR-OF/317: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

PART-II

SECTION-6B
BID DOCUMENTS

TECHNICAL SPECIFICATIONS

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LTD.
National Capital Region Transport Corporation Ltd.
Under CWG Village Flyover NH-24,
CWG Village, Delhi-110092

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NATIONAL CAPITAL REGION TRANSPORT CORPORATION



Technical Specification

For

Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

National Capital Region Transport Corporation Limited
National Capital Region Transport Corporation Ltd.
Under CWG Village Flyover NH-24,
CWG Village, Delhi-110092
Tel: +91-11-24666700
Website: www.ncrtc.in

SECTION: E.00

ELECTRICALWORK

1. GENERAL

1.1 Scope of Work

The scope of work under these specifications generally covers Design, Supply, fabrication, installation/fixing, necessary touch up painting, testing and commissioning of Electrical works and maintenance during 2 year DLP The contractor shall carryout and completes the said work under this contract in every respect in conformity with the current rules and regulations of the Local Electricity Authority, the Indian Standard Institution, Indian Electricity Rules & Act and to all the provisions of the relevant Government Legislation and with the directions of and to the satisfaction of the Employer or his representative. The contractor shall furnish all labour and install all materials, appliances, equipment (except those items which will be supplied by the owner to the contractor at site) necessary for the complete provision and testing of the installation as specified and approved shop drawings of contractor. Exact locations, levels and distances etc. shall be governed by dimensional parameters actually available at site. Any material, appliances, equipment not specifically mentioned herein but which are necessary and customary to make complete installation properly connected and in working condition shall be supplied and installed without any extra cost. The work shall include all incidental jobs / minor civil works connected with installation such cutting, drilling and grouting etc following electrical works.

- Conduiting, wiring, supply & fixing of modular type switches for lighting, etc.
- Conduiting, wiring, supply & fixing of modular type sockets and switches wherever required and as per drawings.
- All Lighting Distribution Boards with system as required and mentioned in BOQ.
- 1.1 kV grade power cables and control cables as per prevailing specification, cable trays,raceways and ducting
- Protective earthing
- Interfacing with Operator and any other NCRTC representatives
- Preparation of Drawings and Design Verification (Including Dialux etc.) complete as required.
- Prepare and submit the As-Built-drawings after completion of Site Work.
- Testing of equipment's at manufacturers work prior to dispatch.
- Testing at site as required.
- Loading, transportation and unloading.
- Protection of stored materials/ installed work against damage due to dirt, sun and rain including providing tarpaulin/ PVC sheet covers as required.
- Providing security arrangements/watch & ward for stored materials and installed works to guard against pilferage including providing temporary covers on conduit outlets after drawing of wires before fixing switches/ fittings etc.
- All incoming and outgoing cables and wires shall be properly labelled as per the layout/schematic drawings for easy identification. Details of circuits being fed from DBs shall be affixed at the back of the door of each DB.
- Housekeeping and clearing of work area during the tenure of contract.

- Demobilization and clearing of all temporary work/facilities after completion of work at site and cleaning work before handing over. The Contractor shall deposit applications as prescribed with the appropriate Authorities on behalf of NCRTC for obtaining sanctions/approvals/permissions/ clearances as detailed below and shall arrange for timely obtaining of the sanctions/ permission/ approvals/ clearance as required. All expenses required to be incurred for obtaining the statutory approvals shall be borne by the Contractor. Only Statutory fees shall however be reimbursed by the NCRTC against duly signed/stamped receipts
- Obtaining clearance from Electrical Inspector (required if any) before and after completion of work
- LOTO (Lockout) Procedures should be followed as per OSHA 1910.147 and BS7671 standard.
- Contractor shall prepare the testing and commissioning procedures documents and submit for approval min 15 days before starting any testing activity. No testing activity will be acceptable before approval of testing procedures which details all testing requirements and parameters in compliance with technical specification and applicable standard requirements for each specific stage of testing.
- Bidder shall be a licensed Electrical Contractor possessing a valid Contractor's license of appropriate class in the state, employing supervisors and skilled workers having valid permits as per the regulations of Indian Electricity Rules and local Electrical Inspectors requirements.
- Work shall be carried out by Contractor shall take prior approval from Employer/Employer's Representatives before Contractor mobilization at Site, Necessary permission to execute the work to obtained from Operator and generally the work will be carried out in non-revenue hours except ground level.
- The required power supply for Façade light will be available at Auxiliary Substation (ASS) of Sarai Kale Khan Namo Bharat station with 63A MCCB in LT Panel.
- The contractor shall also require to installed the façade light/decorative light in the station area/premises other than mentioned in the BOQ schedule as per the direction of Engineer in charge/NCRTC representative.

1.2 Definitions and Abbreviations

A. Definitions

- (V) “Voltage” means the difference of electric potential measured in volts between any two conductors or between any part of either conductor and the earth as measured by a suitable voltmeter and is said to be:
- “Low” where the voltage does not exceed 250 volts under normal conditions subject, however, to the percentage variation allowed by the rules.
- “Medium” where the voltage does not exceed 650 volts under normal conditions subject, however, to the percentage variation allowed by the rules.
- “High" where the voltage does not exceed 33,000 volts under normal conditions subject,however, to the percentage variation allowed by the rules.

B. Abbreviations

- A Amp
- AC Alternating current
- ACB Air Circuit Breaker
- ACDB Alternating Current Distribution Board
- ACPP Air Conditioning Power Panel
- ADP Apparatus Dew Point
- AFC Automatic Fare collection
- ASS Auxiliary Substation
- ASTS Automatic Source Transfer System
- BMS Building Management System
- CI Cast Iron
- cm Centimeter
- CT Current Transformer
- CWS Cold Water Supply
- CPWD Central Public Works Department
- DC Direct Current
- DCDB Direct Current Distribution Board
- DG Diesel Generator
- DP Double Pole
- ELCB Earth Leakage Circuit Breaker
- ETP Effluent Treatment Plant
- EOT Electrical Overhead Travelling
- FCO Floor Clean Out Plug
- FD Floor Drain
- FFL Finished Floor Level
- FRLS Fire Retardant Low Smoke
- FR Fire Retardant
- FT Floor Trap
- FWS Flushing water Supply
- GI Galvanized Iron
- GT Gully Trap
- HT High tension
- HV High Voltage
- IEEE Institution of Electrical and Electronic Engineers

- kVA Kilo volt Ampere
- kW Kilowatt
- Kg Kilogram
- LDB Lighting Distribution Board
- LPM Litre Per Minute
- LT Low Tension
- LV Low Voltage
- M or m mtr or metre
- M&E Mechanical & Electrical
- MCB Miniature Circuit Breaker
- MCCB Miniature Case Circuit Breaker
- MDB Main Distribution Board
- MPCB Motor Protection Circuit Breaker
- MFM Multi-function meter
- MLP Main lighting Panel
- mm Millimetre
- MRTS Metro Rail Transit System
- MS Mild Steel
- NCRTC National Capital Region Transport Corporation
- RRTS Regional Rapid Transit System
- MV Medium Voltage
- PD Property Development
- PVC Poly Vinyl chloride
- PT Potential Transformer
- RCCB Residual Current Circuit Breaker
- RH % Relative Humidity (percent)
- RTU Remote Terminal Unit
- RWMH Rain Water Manhole
- S&T Signalling &Telecom
- SCADA Supervisory Control And Data Acquisition
- SCR Station Controller Room
- SER Signalling Equipment Room
- STP Sewage Treatment plant
- TER Telecom Equipment Room
- TOM Ticket Operating Machine Room
- SP Single Pole
- UPS Uninterrupted Power Supply
- V Volt
- VRF Variable Refrigerant Flow
- VRV Variable Refrigerant Volume
- XLPE Cross link Polyethylene

1.3 Applicable Codes and Regulations

A. IEE Wiring Regulations - Sixteenth edition" or other internationally recognized equivalent standard approved by the Employer's representative examples of which are:

ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BS	British Standard
DIN	Deutsche Industrie Normen
EN	Euronorm Standard
IEA	Indian Electricity Act
IEC	International Electro-technical Commission
IER	Indian Electricity Rules
IES	Illumination Engineering Society, UK
IS/BIS	Bureau of Indian Standards
ISO	International Standards Organization
JIS	Japanese Industrial Standards
NBC	National Building Code
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
VDE	Verb and Deutsche Elektrotechniker

B. Local Codes, Regulations and Standards

i. Unless otherwise stated, the electrical system shall be governed by all applicable local codes, code of practices regulations and standards (all latest) issued by the local agencies such as:

- State/ Central Pollution Control Board
- Chief Electrical Inspector
- Delhi NCR/U.P. Police & Fire Brigade
- Electricity Authority
- Indian Electricity Act
- Indian Electricity Rules
- International Electro-technical Commission
- ISHRAE (Indian Society of Heating, Refrigerating and Air-conditioning Engineers)
- National Building Code
- National Safety Council
- Public Works Department (Central/State)
- Regulations for Electrical crossings of Rail Track

ii. The Contractor shall ensure compliance with the regulations laid down by local authorities i.e., Government, Municipal, Chief Electrical Inspector, and all other statutory agencies including fire safety regulations, fire insurance regulations or other local codes and obtain approvals from relevant authorities at appropriate stages of work as required. The bidder shall submit valid electrical license to execute the work in Delhi state before the start of work at job site.

C. Additional Codes, Standards, Specifications and Manuals

i. In addition to local requirements, electrical system shall comply with the codes of practice and standards specified herein. Local codes, regulations and standards shall take precedence where their standards or requirements are more onerous than other national standards.

ii. It is to be noted that updated and current standards shall be applicable irrespective of dates mentioned with references/ standards in the tender documents.

1.4 Contractual Responsibility

The Contractor shall be fully responsible for ensuring that the manufacture, MAKE, TYPE, quantity and size of equipment's /components / materials brought to site for use in work shall be suitable for the work and shall be compatible with spaces available at site particularly with regard to heights and the widths of approaches to places of installation of equipment's. Approval of shop drawings, makes, samples etc. given by or on behalf of NCRTC shall not absolve the Contractor of this basic contractual responsibility.

1.5 Name Plates

CAUTION BOARDS

Affixing/ pointing caution boards/ danger plates as statutorily required for electrical safety.

NAME PLATES

Providing engraved anodized aluminum or approved equivalent name plates of suitable sizes on switchboards/ panels/ equipment's etc.

CIRCUIT IDENTIFICATION

All incoming and outgoing cables and wires shall be properly labelled as per the layout/schematic drawings for easy identification. Details of circuits being fed from DBs shall be affixed at the back of the door of each DB.

1.6 Civil Works, Cleaning and Painting Civil Works

Minor civil work items required for the work like making chases in walls/ceilings, making holes and openings, providing inserts, grouting sealing of cable trenches to prevent water entry inside rooms, including making good and painting the civil works

HOUSE KEEPING

Housekeeping and clearing of work area during the tenure of contract

FINAL PAINTING

Providing final paint coat to all exposed fabricated steel work and providing matching paint in approved manner over portions of factory painted equipment if damaged during transportation / storage/installation before handing over.

SITE CLEARENCE

Demobilization and clearing of all temporary works/facilities after completion of work at site and cleaning before handing over.

1.7 Water And Electricity

Contractor shall make his own arrangement for water and electricity (if not provided by Employer) for the execution work if not available at site.

1.8 Statutory Approval

The Contractor shall deposit applications as prescribed with the appropriate Authorities on behalf of NCRTC for obtaining sanctions/approvals/permissions/ clearances as detailed below and shall arrange for timely obtaining of the sanctions/ permission/ approvals/ clearance as required. All expenses required to be incurred for obtaining the statutory approvals shall be borne by the Contractor. Only Statutory fees shall however be reimbursed by the NCRTC against duly signed/stamped receipts.

1.9 Internal Electrical Works

Obtaining clearance from Electrical Inspector before and after completion of work (required if any). Necessary permit to work (PTW) to be collected from the operator of Namo Bharat Station before start of the work as per procedure of NCRTC Operators. Generally the permit to work will be issued to work in non-revenue hours.

1.10 Compliance of Statutory Observation

Complying with observations, if any, of Electrical Inspector and/or any other Statutory Authority after completion of work in order to obtain a categorical clearance to start beneficial use.

1.11 Supply of Manuals and Drawings

SHOP DRAWINGS ON AWARD OF WORK BEFORE COMMENCEMENT

The Contractor shall furnish manufacturer's test certificates in respect of materials/ equipment / components to be used on work as required and shall submit shop drawings for all works to Engineer/ Employer for approval before commencementof work at site/ fabrication/ manufacture.

COMPLETION DOCUMENTS

The Contractor shall submit complete documents comprising of the following at the time of handing over:

a) 3 hard copies of Operating Instructions and Service Manuals for all equipment and the installation along with soft copy for use by Owners operating staff. The Owners

operating staff shall also be instructed in proper operation of specialized equipment/systems.

b) 3 sets of test results of pre-commissioning tests carried out at site.

c) 3 sets of "As Built" completion drawings.

1.12 Manufacturers Instruction

Where manufacturers have furnished specific instructions relating to the materials used in this job, covering points not specifically mentioned in these documents, manufacturer's instructions shall be brought to the notice of the NCRTC for further instructions in the matter.

INTERCHANGE ABILITY

All similar parts and/or equipment shall be interchangeable with one another.

MATERIAL TESTING

The NCRTC and its representative shall have full powers to require any material used in work to be tested by an independent agency at the Contractor's expense in order to prove its soundness and adequacy.

INSPECTION AT MANUFACTURERS' WORKS

Prior to shipment of equipment, the NCRTC and its representative reserves the right to inspect the equipment at Manufacturer's Works. Contractor shall provide and secure every reasonable access and facility at Manufacturer's Works for this inspection for the NCRTC / Authorized representative. Contractor shall intimate the readiness of equipment in advance and minimum 15 days prior to the scheduled inspection date.

TESTING AT SITE BEFORE INSTALLATION

All the System installed as part of this work shall be load tested and performance tested at the time of commissioning. All the consumables, test equipment's etc. required for the test shall be arranged by the contractor.

1.13 Safety Regulations

The Contractors shall, at their own expense, arrange for safety provisions as per safety codes of Indian Standards Institution, Indian Electricity Act and such other Rules, Regulations and Laws as may be applicable, as indicated below, in respect of all labour, directly or indirectly employed in the work for performance of the Contractors' part of this agreement.

a) No inflammable materials shall be stored in places other than the rooms specially constructed for this purposes in accordance with the provisions of Indian Explosives Act. If such storage is unavoidable, it should be allowed only for a short period and in addition, special precautions, such as cutting off the supply to such places at normal times, storing materials away from wiring and switch boards, giving electric supply for a temporary period with due permission of Engineer/NCRTC representative shall be taken.

b) Protective and safety equipment such as rubber gauntlets or gloves, earthing rods, line men's belt, portable artificial respiration apparatus etc. should be provided in easily identifiable locations. Where electric welding or such other nature of work is undertaken, goggles shall also be provided.

c) Necessary number of caution board such as "Man on Line, Don't switch on" should

be readily available in easily identifiable locations.

Periodical examination of the first aid facilities and protective and safety equipment provided shall be undertaken and proper records shall be maintained for their adequacy and effectiveness.

d) Charts (one in English and one in regional language) displaying methods of giving artificial respiration to a recipient of electrical shock shall be prominently displayed at appropriate places.

e) A chart containing the names, addresses and telephone numbers of nearest authorized medical practitioners, hospitals, Fire Brigade and also of the officers in charge shall be displayed prominently along with the First Aid Box.

f) Steps to train supervisory and authorized persons of the Engineering staff in the First Aid Practices, including various methods of artificial respiration with the help of local authorities such as Fire Brigade, or other recognized institutions equipped to impart such training shall be taken, as prompt rendering of artificial respiration can save life at time of electric shock.

g) No work shall be undertaken on live installations, or on installations which could be energized unless one other person is present to immediately isolate the electric supply incase of any accident and to render first aid, if necessary.

h) No work on live L.T. bus bar or pedestal switchboards should be handled by a person below the rank of a Wireman and such a work should preferably be done in the presence of the contractor's Engineer supervising of the work. When working on or near live installations, suitably insulated tools should be used, and special care should be taken to see that those tools accidentally do not drop on live terminals causing shock or dead short.

i) Before starting any work on the existing installation, it should be ensured that the electric supply to that portion in which the work is undertaken is preferably cut off. Precautions like displaying "Men at Work" cautions boards on the controlling switches, removing fuse carrier from these switches and these fuse carriers being kept with the person working on the installation, etc. should be taken against accidental energization. "Permit to Work" should, be obtained from the Engineer-in-charge. 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.

j) Before energizing on an installation after the work is completed, it should be ensured that all tools have been removed and accounted, no person is present inside any enclosure of the switch board etc. any earthing connection made for doing the work has been removed, "Permit to Work" is received back duly signed by the person to whom it was issued in token of having completed the work and the installation being ready for re- energizing and "Men at Work" caution boards removed.

In case of electrical accidents and shock, the electrical installation on which the accident occurred should be switched off immediately and the affected person should be immediately removed from the live installation by pulling him with the help of his coat, shirt, wooden rod, broom handle or with any other dry cloth or paper. He should be removed from the place of accident to a nearby safe place and artificial respiration continuously given as contained in BIS. Code and Standard prescribed by St. John Ambulance Brigade or Fire Brigade. If needed the affected person should be taken to nearest hospital without loss of time. Ambulance Brigade or Indian Red Cross should be provided in easily identifiable locations and should be readily available. Periodical examination of the first aid facilities and protective and safety equipment provided shall be undertaken and proper records shall be maintained for their adequacy and effectiveness.

1.14 Indemnity

The Contractor shall be solely responsible for claims arising out of any accident at site of work during the tenure of contract and shall cover such risks with suitable insurance. The NCRTC shall not be responsible for any direct or indirect consequence of such accidents. Any damage to the NCRTC existing services/ property, installations of the other system Contractor and third party during the execution of the work have to be made good by contractor at his own cost to the entire satisfaction of the owning agency.

1.15 Certificates

On completion of the all installation a certificate shall be furnished by the Contractor countersigned by the Licensed Supervisor, under whose direct supervision of the installation was carried out. This certificate shall be in the prescribed form as required by the local supply authority.

1.16 Workmanship

Good workmanship is an essential prerequisite to be complied for this work. Entire work shall be carried out in the most workmanlike manner by skilled workers under competent supervision

1.17 Technical Requirements

A. The design, supply, installation, testing & commissioning of main items of equipment and materials viz. wiring, luminaries, electronic chokes, FRLS XLPE/PVC cables and outdoor lighting equipment etc. shall be made in accordance with the latest codes & standards specified in these documents.

B. Specifications shall find precedence over the relevant standards indicated. In case of doubt or not mention of specification or standards, the CPWD specifications shall be followed. However,the decision or clarifications of Employer's representative or the Engineer on above shall be final & binding. No deviation from the agreed designs shall be accepted unless specifically agreed to by Employer's representative and notified. In case of any conflict between specification and the standards the instruction/decision of engineer of employer authorized representative shall be binding.

C. The other items of equipment and all components and materials shall meet or exceed the referred standards / specifications (**latest revision**) or equivalent:

IS:1387-1993	General requirements for the supply of metallurgical materials
IS:617-1994	Aluminium and aluminium alloy ingots and castings for general engineering purposes
IS:1554 (Part-I) – 1988	PVC insulated (heavy duty) electric cables: Part 1 For working voltages up to and including 1100 V
IS: 694 – 2010	PVC Insulated cables for working voltages up to and including
1100 V IS:7098 Part-I 1988 For	Cross-linked polyethylene insulated PVC sheathed cables: Part 1
	working voltage up to and including 1100 V
IS: 800-2007	Code of practice for general construction in steel
IS: 5 - 2004	Colours for Ready Mixed Paints and Enamels
IS: 2551-1982	Danger notice plates
IS: 5578-1984	Guide for marking of insulated conductors
IS: 10118 Parts I to 4 -1982	Code of Practice for Selection, Installation and Maintenance of Switchgear and Control gear

IS 1913 Part-I 1978	General and safety requirements for luminaires: Part 1 Tubular fluorescent lamps
IS: 1777-1978	Industrial luminaires with metal reflectors
IS: 3553-1966	Specification for Watertight Electric Lighting Fittings
IS: 5039-1983	Distribution pillars for voltages not exceeding 1 000 V AC and 1200 V DC
IS: 2675-1983	Enclosed distribution fuse boards and cut-outs for voltages not exceeding 1000 V ac and 1200 V dc
IS: 2667-1988	Fittings for rigid steel conduits for electrical wiring
IS: 3480-1966	Flexible steel conduits for electrical wiring
IS 9537 : Part 1 : 1980	Conduits for electrical installations: Part 1 General requirements
IS 9537 : Part 2 : 1981	Conduits for electrical installations: Part 2 Rigid steel conduits (superseding IS:1653)
IS 9537 : Part 3 : 1983	Conduits for electrical installations: Part 3 Rigid plain conduits of insulating materials (superseding IS:2509)
IS 9537 : Part 4 : 1983	Specification for Conduits for Electrical Installations - Part 4 : Pliable Self-recovering Conduits of Insulating Materials
IS 9537 : Part 5 : 2000	Conduits for Electrical Installations - Part 5 : Pliable Conduits of Insulating Material
IS 9537 : Part 6 : 2000	Conduits for Electrical Installations - Specification - Part 6 : Pliable Conduits of Metal or Composite Materials
IS 9537 : Part 8 : 2003	Conduits for Electrical Installations - Specification - Part 8 : Rigid Non -Thread able Conduits of Aluminium Alloy
IS: 3837-1976	Accessories for rigid steel conduits for electrical wiring
IS: 4615-1968	Switch socket outlets (non-interlocking type)
IS: 2713 (Parts I to III)-1980	Specification for Tubular Steel Poles for Overhead Power Lines IS: 2141 Hot Dip Galvanized Stay Strand - Specification
IS: 209	Zinc Ingot – Specification
IS: 3618	Specification for Phosphate Treatment of Iron and Steel for Protection Against Corrosion
IS 13340 :	Power Capacitors of Self-healing Type for AC Power Systems having Rated Voltage up to 650 V – Specification
IS/ IEC60947 : Part 1 :	Specification for Low-voltage Switchgear and Control gear - Part 1 : General Rules
IS/IEC60947 : Part 2 :	Specification for Low-voltage Switchgear and Control gear - Part 2 : Circuit Breakers
IS/IEC60947 : Part 3 :	Specification for Low-voltage Switchgear and Control gear - Part 3 : Switches, Disconnections, Switch Disconnections and Fuse Combination Units
IS/IEC60947 : Part 4 : Sec 1	Specification for Low-Voltage Switchgear and Control gear - Part 4 : Contractors and Motor-Starters - Section 1 : Electromechanical Contactors and Motor Starters
IS/IEC60947 : Part 5 : Sec 1 : 2004	Low-Voltage Switchgear and Control gear - Specification - Part 5 : Control Circuit Devices and Switching Elements - Section 1 : Electromechanical Control Circuit Devices
IS/IEC60947 : Part 5 : Sec 2 : 2004	Low-Voltage Switchgear and Control gear - Specification - Part 5 : Control Circuit Devices and Switching Elements - Section 2 : Proximity Switches
IS/IEC 60947 : Part 6 : Sec 1	Specification for low voltage and control gear multifunction equipment. Automatic transfer switching equipment.

IS:383 – 1970	Specification for coarse and fine aggregates from natural sources for concrete
IS:456 – 2000	Plain and Reinforced Concrete - Code of Practice
IS:516-1959	Method of test for strength of concrete
BS:3871, IS:2516	MCCBs
IS:8828 – 1996	Electrical Accessories - Circuit Breakers for Over Current Protection for Household and Similar Installations
IS: 4722 – 2001	Rotating Electrical Machines - Specification
IS: 3231	Specification for Electrical Relays for Power System Protection
IS: 11353 – 1985	Guide for Uniform System of Marking and Identification of Conductors and Apparatus Terminals
IS: 10118 (Parts 1 to 4) 1982	Code of practice for selection, installation and maintenance of switchgear
IS: 3043 : 1987	Code of Practice for earthing
IS: 732 – 1989	Code of Practice for Electrical Wiring Installations
IS: 5578 – 1984	Guide for marking of insulated conductors
IS: 5216 Part I & II 1982	Recommendation on Safety Procedures and Practices in Electrical Work
SP: 30 : 1985	National Electrical code
IS: 1646 – 1997	Code of practice for fire safety of buildings (general): Electrical installation
IS: 2075 – 2000	Ready Mixed Paint, Staving, Red Oxide Zinc Chrome, Priming – Specification
IS: 1248 (All Parts) 2003	Direct Acting Indicating Analogue Electrical Measuring Instruments and their Accessories - Specification
IS:13779 – 1999	ac Static Watthour Meters, Class 1 and 2 – Specification
IS: 3618 – 1966	Specification for Phosphate Treatment of Iron and Steel for Protection Against Corrosion
IS: 6005 – 1998	Code of practice for phosphating of iron and steel IEC 60332 (Various
parts)	Tests on electric cables under fire conditions
IEC 61439 (Part1,2&3)	Low-voltage switchgear and control gear assemblies
IS/IEC 60947	Specification for Low-voltage Switchgear and Control gear Fire detection and alarm systems for buildings
BS:5839 IEC 61641	Low-voltage switchgear and control gear assemblies-guide of test under condition of arch due to internal fault
IEC 61869	Instrument transformer

1.18 Service Life of the Equipment's

Contractor shall furnish manufacture's certificate for secured service life of the equipment.

1.19 Designation of Equipment's

A. Equipment designation shall be identified and labelled in conformity with the plans, schematics, block and single-line diagrams and as built drawings for easy identification, reference & subsequent maintenance. The Contractor shall get the Material and letter sizing (Font Size) approved from the Employer's representative before use.

B. Numbers - Each piece of equipment shall be numbered according to the number of the circuit breaker feeding the piece of equipment. Terminal cabinets shall be numbered sequentially.

C. Equipment, cables, boards, panels shall be numbered for type and serial number. Each equipment number shall be preceded by a suitable letter designation. A list may be drawn & got approved to adopt in all references.

D. Letters - Each equipment number shall be preceded by a suitable letter designation uniformly adopted viz.:

Description	**Abbreviation/ Designation**
Automatic Transfer Switch	ATS
Automatic change over switch/ Change over switch	ACOS/COS
Main Distribution Board	MDB
Control Panel	CP
Disconnect Switch	DS
Isolator	I
Automatic Fare Collection/signalling & Telecom Power Panel	AFC/S&T
Diesel Generator/ Uninterrupted power system	DG/UPS
Normal/Emergency/ Lighting	N/E/L
Motor	M
Motor Control Centre	MCC
Motor Starter	MS
Power Panel	PP
Distribution Board/Sub Distribution board	DB/SDB
Switchboards	SB
Switchgear	S
Terminal Cabinet/Terminal Block	TC/TB
Transformer	Tr
Other devices/boards in use	As approved

These designations shall be subject to modifications and shall be got approved from Employer'srepresentative, during execution of works.

1.20 Operating Parameters

Operating parameters for electrical works shall generally be 3-phase, 4-wire, 415V, 50Hz unless specified otherwise.

1.21 Rating, Sizes and Calculations

A. Power system shall be provided to suit the equipment chosen for voltage, capacity, and fault duty to which it is exposed.

B. The ambient temperature and ambient humidity for Electrical Switchgear shall be as per IEC 60947 (Clause 6.1.1 and 6.1.3 of IEC60947) and for Electrical panel as per IEC61439 para clause7.1.1 & 7.1.2.

1.22 General Features

A. All equipment's & components must be capable of performing continuous duty at full load.

B. The panel/boards shall be aesthetic design, dust & vermin proof, modular /extendable maintenance friendly construction so that the defective equipment can be readily replaced/ trouble-shot with ease & speed, when required. The arrangement of controlling switches in the / Distribution boards / and their marking shall be such that these are prominent, easily identifiable and accessible. Single line power / control diagrams shall be placed at the back of door or other accessible locations in the board/panels with complete details as required and directed to facilitate easy maintenance.

C. Prior to shipment of equipment, the Employers' representative reserves the right to inspect the equipment at the manufacturers' works and the Contractor shall provide and secure for the Employers' representative every reasonable access and facility at the manufacturers' works for such inspection.

1.23 Quality Control of Equipment's, Components And Material

A. All major equipment's and materials such as LV Distribution boards, change over switches, luminaires, electronic chokes, FRLS XLPE cables etc. as required for the work shall be subject to Quality Assurance Programme to ensure proper supply and use of raw materials, processes, installation/execution and tests.

B. The contractor shall furnish the Quality Assurance Programme prior to fabrication of various assemblies and their supplies for installation. A well-documented quality plan shall be charted indicating all the activities and interfaces relating to the sustained check on quality of workmanship and materials used in various stages of the work and get approval from employer.

C. All makes of components & accessories shall be got approved before use including the enclosure design before fabrication. Progressive inspections shall be arranged as desired by the employer's representative.

D. The Contractor shall incorporate adequate standardization to ensure minimum variety and sizes of equipment, accessories, sub-assemblies, systems and practices.

1.24 Corrosion Protection

All ferrous components and fittings exposed to the atmosphere shall be hot-dip galvanized unless specified otherwise.

1.25 Acoustic Criteria

Noise emanating from the equipment / service installations shall not exceed as per provision given in the relevant international standards for each of the equipment.

1.26 Spares, Special Tools and Test Equipment's

A. During construction/commissioning and maintenance period, all such Spares, tools & test equipment's & material required for repair/ replacement/ making good, shall be arranged by the contractor whether explicitly mentioned or not without any financial implication on employer.

B. Not used

C. The Contractor shall recommend stockholding considering lead-time for procurement of the respective items.

D. Where the Contractor considers that any equipment, which cannot be economically or technically maintained by the Employer then these items shall be identified and proposals submitted for maintenance of such equipment within 180 days prior to completion of maintenance period .

1.27 Service / Working Conditions

A. All the equipment's, material shall be designed/ provided to suit/ work continuously under conditions of ambient temperature of 50^{o}C and relative humidity up to 95% non-condensing or as specified NBC.

B. All the equipment's shall be capable of continuous operation under environmental and power supply conditions of Voltage and frequency variation.

1.28 List of Makes

A. Contractor shall use the material/ components / products of list of make as indicated in 'list of make' enclosed vide Annexure-'2', unless specified otherwise or as approved by the Employer's representative.

B. The Contractor shall quote the rates for material and equipment's as per the list of makes. In the event of contractor wanting to use alternate makes other than those stipulated for any reason, the contractor can send a proposal after ensuring that what he proposes meets both the quality, safety standard of the tender specifications/requirements and key dates. He shall also stand full guarantee to his alternate proposal. The alternate makes can be used only after an approval accorded by the Employer, whose decision will be final in the matter.

1.29 General

A. All materials shall be strictly as per relevant standards. Samples of materials, light fixtures, or any item sought shall be got approved before use from Employer's representative or 'the Engineer' and all approved samples shall be duly and properly

exhibited at the site of work forverification from time to time during the execution. Wherever required, necessary proof of origin of the various materials shall be submitted.

B. Good and neat workmanship and total compliance with the safety and other statutory rules and regulation, are the prime requirements under this contract.

C. All quoted rates shall cover Design, supply of all materials, handling of material, labour, appurtenant civil works, taxes and duties, fabrication, installation, testing, commissioning and handing over. The rates shall be applicable for working at all heights and levels at the site and shall include cost of any fees payable for inspection by the Statutory bodies, rectification wherever ordered by such authorities. Installation also includes the foundation, fixing, securing as per application duty.

D. Not Used.

E. Final painting to the equipment's, panels, boards, Structure etc. as required shall be done as per approved colour scheme.

F. Shop drawings – The contractor shall prepare and furnish all shop drawings in (size as decidedby engineer in charge) at no extra cost for approval by the Employer before commencing fabrication, manufacturing of the equipment and before carrying out any work at site as required after issue of award of contract & initial set of working drawings. The shop drawings shall be prepared in Auto CAD or by other suitable means. Such shop drawings shall be based on the Architect / Consultant drawings and requirements laid down in the specifications and as per site conditions. The shop drawings shall also indicate other services which are coming in the same area. It shall be the responsibility of the contractor to take the approved shop drawings of other services contractors and coordinate / incorporate the other services in their shop drawings. The manufacture of equipment and work at site shall be commenced only after the shop drawings are approved in writing by the Employer. Such drawings shall be coordinated with all disciplines of work. The shop drawing should clearly indicate the work to be carried out by other agencies e.g. civil works required for equipment foundation, trenches, equipment rooms etc.

- Shop drawings shall be submitted for approval sufficiently in advance of planned delivery and installation of any materials to allow Employer or his representative ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to his failure to produce shop drawings at the right time, in accordance with theapproved programme.
- Manufacturer drawings, catalogues, pamphlets and other documents shall be submitted for approval. Each item in each set shall be properly labelled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.
- Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of the responsibility or requirement to furnish material and perform work as required by the contractor.
- Where the contractor proposes to use an item of equipment, other than that specified or detailed on the drawings, which require any redesign of the structure, partitions, foundation, piping, wiring or any other part of the mechanical, electrical

or architectural layouts; he shall inform the Employer well in advance and no delays resulting from such redesign shall be admissible. He shall also submit all related information as may be required for such redesign to the Employer.

- Where the work of the contractor has to be installed in close proximity to, or will interferewith work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Employer or his representative, the contractor shall prepare composite working drawings and sections at a suitable scale not less than 1:50 clearly showing how his work is to be installed in relation to the work of other trades. If the contractor installs his work before coordinating with other trades, or so as to cause any interference with work of other trades, he shall make all the necessary changes without extra cost to the owners.
- The contractor should also submit Catalogues, Manufacturer's drawings, equipment characteristics data, performance chart etc. as required by the Engineer.

1.30 Distribution boards

A. All panels/boards shall be dead front, front operated, dust, vermin proof, extensible, top/bottom cable entry, compartmentalized made of CRCA sheet steel of thickness of 2.0mm & rigid supports for components and with lockable hinged doors.

B. All components like, circuit breakers, switches, hook-up wiring etc. shall be compatible with the short-circuit levels. Bus bar supporting systems shall withstand without deflection or deformation, the short circuit forces due to the stated short circuits. All inter wiring shall be with suitable stranded copper conductor FRLS insulated wire.

C. All bus bars shall be electrolytic copper with purity of 99.9% and rated for the incoming switch or breaker rating. Current density shall be 1.4 amp/sq. mm. The Bus Bar temperature rise overambient shall be as per IS/IEC standards. The calculations for temperature rise should be furnished for approval

D. Indicating lamps shall be multiple LED/neon type preferably

E. All CT's & PT's shall be resin cast

F. All relays, meters & switches shall be flush mounted

G. All metering equipment's shall be digital unless specified otherwise or as approved by the employers' representative.

1.31 Cabling

A. All cables used on this work shall meet the requirements of specifications and standards specified.

B. Cables shall be laid in air/ surface/ recess/ pipes/ trench etc as required.

1.32 Conduit Wiring

A. All conduits and all the accessories there with shall be Hot-dip galvanized / or as specified andISI marked.

B. All wires shall be fire retardant Low Smoke (FRLS) whether so stated or not either in the drawings, specifications or BOQ.

1.33 Earthing

A. The earthing system is primarily of galvanized steel and the earthing configuration is Indian TN-S as per IS: 3043 – 1987 and earth mats shall be designed and constructed in accordance with IEEE 80 – 2000 to limit the grid resistance, maximum attainable grid potential and step / touch potentials within the safe limits. The contractor should ensure that the intents of the earthing configuration are met with by providing a single-phase-ground fault current sufficientenough to trip all the circuit breakers and fuses in the system.

B. Based on ground strata, the number of earth stations may be varied to achieve the above objective.

1.34 Mode Of Measurement

Mode of measurement for various items has been spelt out broadly as under, however it does not dilute in any manner the specifications, application duties and site requirements. This shallalso include all the associated items explicitly or implicitly mentioned/ required as per the specifications, standards, code of practice, and drawings for successful installation (including foundation if any), testing and commissioning of the work.

1.35 Distribution Boards

A. Supply, installation/fixing, testing & commissioning of distribution board complete with the various components specified, indicating lamps, supporting frame, internal wiring, erection etc., will be treated as one unit for the purpose of measurement and payment

B. Protective earthing of the boards to earthing system will be measured separately and paid at unit rates as specified in BOQ.

1.36 Medium Voltage Cabling

A. Procurement of cables shall be on the basis of actual site measurements and the quantities shown in the schedule of work shall be regarded as a guide only. The cable runs shall be free of joints measured up to the outer end of the boxes without any allowances for overlap in joints, if unavoidable. The actual run of the cables shall be measured and the rate shall includeall the above mentioned material, labour etc for laying as required.

B. Cable will be measured on the basis of a common rate per unit length indoor or outdoor and shall include the following:

i. For cables laid indoors:

- Supply of Cables, clamps, securing arrangement
- Installation, commissioning and testing
- Cable marking, tags & route indicator AND

C. Each cable termination, i.e. termination of both end of cable will be measured as one unit for payment. The item shall include the following:

i. Cable glands, lugs, bolts, nuts.

ii. All jointing materials.
iii. Earthing the glands with armour.
iv. Installation, testing and commissioning.

1.37 Conduit Wiring

A. Wiring for light, socket etc. outlet shall be carried out as per tender specification, shall be measured and paid on loop point basis only as described below. Rates quoted for point wiring items shall be based on parameters stipulated in BOQ. Contractor may verify the site requirement and drawings to form the basis of point wiring rates. No claim for extra payment on account of electrical layouts in parts of projects requiring larger average wiring and conduit length per point, whether specifically shown in tender drawings or not, shall be entertained after the award of contract.

B. All circuit wiring commencing from the distribution board to the first switch box in the case ofswitch controlled lights and from distribution board to first light point (Circuit Point) in case ofMCB controlled lights shall be measured in point along the centre line of the conduit and shall include all junction boxes, connectors, earth wire, fixing accessories, connection to all light fittings, switches, fish wires etc. as specified and shown on drawings but excluding switches, sockets with their boxes and light fittings. Cost of MCB is also not included as this cost is included in the item of DB.

C. Further wiring from the circuit point/switch box to the further lights or sockets will be a secondary or looping point and paid for per point. This should include all fixing accessories, JB's connections, terminal boxes and terminating accessories etc.

D. All switches sockets with boxes, earthing interconnection and modular type silver contact switch shall be paid for per unit of 1 switch, 2 switch, 3 switch, 4 switch units, 2 way switch, 6A/16A switch-sockets, 20A/30A/60A M.C sockets generally as specified in the BOQ.

E. The cost of GI conduits (including flexible conduit as required) with fish wires, junction / pull boxes are included in the rate of point / loop / control wiring.

F. The rate of supply and laying of other conduits, point / loop / control wiring shall include the cost of fish wire (pull wire) in conduits complete with junction boxes, pull boxes, etc.

G. The load of such circuit shall be restricted to 800 W and circuit shall not have more than a totalof ten points of lights (with approval of Engineer/Employer).

1.38 Protective Earthing

A. Providing earthing station complete as per specification and BOQ shall be treated as one unit of measurement for plate and pipe earthing.

B. The following items of work shall be measured and paid per unit length covering the cost of the earth wires/strips clamps, labour etc.

i. Main equipment earthing grid and connections to the earthing stations.
ii. Connections to the switchboard, power panels, distribution boards etc.

C. The cost of earthing the following items shall become part of the cost of the item itself and noseparate payment for earthing shall be made.

i. Light fittings - form part of installation of the light fittings.
ii. Conduit wiring cabling - should form part of the wiring or cabling.
iii. Street lighting - should form part of the external cable armouring which shall incorporatea protective earth-conductor which shall be used for earthing of the pole etc.

D. Other items shall be paid as explained in BOQ.

1.39 Not use

1.40 Mode of Measurement of Point Wiring

A. In case of points with more than one light point controlled by the same switch, such point shallbe measured in two parts i.e. from the switch to the first point called as light point. First pointto second point, second point to third point etc. are called as loop point. No circuit wiring shallbe paid extra i.e. the point wiring shall include the wiring of light / outlet of any length from the distribution board via switch to the point. Measurements shall be in numbers.

B. The supply of following shall be deemed to be included as part of the point wiring rate - light wires, GI conduits with all accessories, junction and inspection boxes.

C. Wiring shall be carried out as per IS / IEC / CPWD and local bodies regulations.

D. Earthing wire of 2.5-sqmm FR PVC insulated copper conductor is also included in the point wiring rate and nothing extra shall be paid for it.

E. The point wiring rate shall also include the rate of 20/25mm diameter GI rigid/ flexible conduitincluding check nut and fixing on both sides, fixing the GI conduit and required wiring from thejunction box to the fixture.

F. With regard to 6 Amp and 16 Amp outlets, these shall be measured in numbers and rate shallinclude wires, conduits with all accessories, junction and inspection boxes and earthing wires.

2. ELECTROMAGNETIC COMPATIBILITY

A. All equipment's shall conform with the objectives of the European Directive on EMC (89/335/EEC) wherever applicable and where appropriate shall be affixed with the CE mark.

B. Equipment shall be tested and the level of conducted interference transmitted, level of immunity to conducted and radiated interference received shall be established for all equipment's to conform to the required levels.

C. Machinery shall comply with the requirements of EN 55081, IEC 801 Part-1 to 3 and BS 6667 Part-1 to 3.

2.1 Standardization

A. Where practical and as part of the general design philosophy to minimize the number of different components used on the plant and equipment supplied for the Contract, similar plantand equipment will be replaceable / interchangeable, of modular design

and adaptable and extendable. To this end the following principles will apply:

i. Technical specifications and design standards will be uniform
ii. Operating system will be uniform for all system / sub-systems
iii. Standards for maintenance planning will be uniformly categorized
iv. Uniform standards will be designated for procurement, replacement, stocking andavailability
v. Equipment and accessories will be provided with uniform standard spare capacity and protection.
vi. Piping, cabling etc. will carry standard colour coding for identification and categorizationfor each kind of use / type. Similarly, a standard procedure will be followed for identification of each category of equipment while marking and numbering each category of equipment.

Test standards will be framed such that all the plant and equipment meets the same testcriteria. To ensure that this will be the case the following will apply:

a) Type testing, routine testing and endurance tests reports as per relevant standards shallbe submitted.

b) Test evaluation and performance will be compared with standardized acceptance criteria

SECTION: E.01

1. DISTRIBUTION BOARDS

1.1 Scope

The scope of work shall cover the design, manufacture, supply, installation, testing and commissioning of distribution boards as specified and shown in respective drawings. Associated minor civil works required for the erection of the DB's such as niche in walls etc. are also included in the scope of this contract.

1.2 Standards

The following updated and current Indian Standard Specifications and Codes of Practice shall apply to the equipment and the work covered by the scope of this contract irrespective of those listed.

IS : 8828 – 1996	Electrical Accessories - Circuit Breakers for Over Current Protection for Household and Similar Installations
IEC: 61439	Specification for Low-voltage Switchgear and Control gear
IS/IEC: 60947	Specification for Low-voltage Switchgear and Control gear
IS : 10118 - 1982	Code of Practice for Selection, Installation and Maintenance of Switchgearand Control gear
IS: 2675 – 1983	Enclosed distribution fuse boards and cut-outs for voltages not exceeding1000 V Ac and 1200 V Dc
IS: 5578 – 1984	Guide for marking of insulated conductors
IS: 11353 – 1985	Guide for Uniform System of Marking and Identification of Conductors and Apparatus Terminals

IS: 9926 – 1981 Fuse wires used in rewireable type electric fuses up to 650 volts

All equipment, components, materials and entire work shall be carried out in conformity with applicable and relevant IS/BS/IEC Standards and Codes of Practice. In addition relevant clause of Indian electricity act 2003 and Indian electricity rule 1956 amended up to date shall apply.

Necessary test certificates in support of the certification shall be submitted prior to supply of the equipment.

1.3 Miniature Circuit Breakers

A. The MCBs shall be of the completely moulded design suitable for operation at 240/415 Volts 50 Hz, single phase/3-phase and neutral system. MCBs shall be quick make and break type conforming to relevant standards. Housing shall be heat resistant and have high impact strength. MCBs shall be flush mounting type and shall be provided with trip free manual operating liver with ON/OFF indications

B. MCBs shall be provided with magnetic thermal releases for over current and short circuit B. protection with separate indications for short circuit.

C. MCBs shall have quick make and break non-welding self-wiping silver alloy contacts rated for 10 kA or 15 kA (as applicable in BOQ) short circuit at 230/415 volts in accordance with IEC 60898 and IS : 8828 - 1996 as per the schedule & the drawing both on the manual and automatic operation. The MCB shall confirm to Class 3 Energy Limitation. The MCB shall be confirm to Class 3 Energy Limitation. Each pole on the breaker shall be provided with inverse time thermal over load and instantaneous over current tripping elements, with trip-free mechanism. In case of multi-pole breakers, the tripping must be on all the poles and operatinghandle shall be common.

D. Breakers must conform to IEC 60898 with facility for locking using padlock with hasp in OFF position. Copper Pressure clamp terminals for stranded/solid conductor insertion are acceptable up to 10-sqmm size and for higher ratings, the terminals shall be suitably shrouded.

E. MCB shall have a minimum life expectancy of 20,000 operations.

1.4 Residual Current Circuit Breaker

A. RCCBs shall be double pole or four-pole current-operated, housed in a totally enclosed moulded case, manufactured and tested in compliance with IEC 61008 or EN 61008.

B. RCCBs shall meet the following requirements:

i. Number of poles: double-pole or four-pole as specified on the Drawings,
ii. Rated current (ln): as shown on the Drawings,
iii. Rated residual operating current: 30 mA or 100 mA or 300 mA as shown on thedrawings or as per approval of the Engineer.
iv. Rated voltage: 240 / 415 V AC,
v. Rated frequency: 50 Hz,
vi. Rated short-circuit capacity: not less than 10 kA unless otherwise specified,
vii. Operating characteristics in case of residual currents with DC components: as specified,
viii. Method of mounting: distribution board type,

ix. Method of connection: connection shall be made with proper size of thimbles andnumber ferreting for circuit identification,

x. I^2t characteristic: suitable for equipment and circuit being protected,

xi. Degree of protection: IP 2X to IEC 60529 or EN 60529, and

xii. Reference ambient temperature: 50°C.

C. The tripping mechanism shall be of trip-free so that the unit cannot be held closed against an earth fault. Tripping devices utilizing electronic amplifiers or rectifiers are not acceptable.

D. Provision shall be made for testing the automatic earth - leakage tripping by an integral test device. A device shall be fitted for prevention against reclosing after the device has tripped onearth leakage. There shall be separate indication on RCCB for earth leakage faults.

1.5 Construction of Distribution Boards

A. The distribution equipment, as detailed in schedule of quantities and forming a part of the Distribution Boards, shall comply to the relevant Standards and Codes of the Bureau of IndianStandards.

B. Distribution boards for miniature circuit breakers shall be of sheet steel construction with a minimum thickness of 1.6 mm, suitably braced to form a rigid structure. Exterior corners and edges shall be rounded to give a smooth overall appearance. Hinged swing doors shall be fittedwith gaskets and shall be easily removable to simplify installation. DBs shall be provided with suitable size of surge protection. DBs shall be fixed with bottom at 1200 mm from finished floors. DBs shall be fixed properly, fitted square with the frame and with holes correctly positioned. DBs shall be fastened to the walls with suitable grouted studs of not less than 12- mm diameter.

C. All DB's should have minimum IP 54 construction. All Cut-outs/Conduit knockouts on top and bottom and covers shall be provided with PE sealed gaskets to provide minimum IP 54 degreeof protection.

D. Three phase boards shall have phase barriers and a wire channel on three sides generally as shown on approved working drawings. Neutral bars shall be solid tinned copper bars with tapped holes and cheese headed screws. For 3 phase DB's, 3nos independent neutral bars shallbe provided. All DB's shall be internally pre-wired using copper conductor FRLS PVC insulated wires brought to a terminal strip of appropriate rating for outgoing feeders.

E. Board shall meet with the requirements of IS: 2675 – 1983 and marking arrangement of busbars shall be in accordance with IS 5578 – 1984.

F. Bus Bars shall be heat shrinkable PVC insulated electrical grade copper and suitable for the incomer switch rating and sized for a temperature rise of 30□C Over the ambient.

G. Each board shall have two separate earthing terminals. One earthing terminal for single phase and two terminals for 3 phase DBs shall be provided with an earth strip connecting the studs and the outgoing earth bar.

H. Circuit diagram indicating the load distribution shall be pasted on the inside of the DB as instructed. Each circuit shall be clearly numbered from left to right to correspond with wiring diagrams.

I. All outgoing feeders shall terminate on a terminal strip which in turn is pre-wired to the MCB by means of insulated single conductor FRLS PVC insulated copper wires as follows:

Up to 10A	2.5 sqmm
Over 10A and up to 16A	4.0-sqmm
Over 16A and up to 32A	6.0-sqmm

J. Each DB shall have multiple LED type indicating lamps on the in-comer and all outgoing feedersdenoting power availability in the board after the switch.

K. All the internal connections shall be with solid/multi-stranded copper conductor PVC insulated with heavy duty ferrules of adequate temperature rating. All the internal connections shall be concealed by providing a hinged protective panel to avoid accidental contact with livepoints. All outgoing equipment mounted on a frame work for easy removal and maintenance shall be connected direct to the bus bar on the live side. Knock out holes of appropriate size and number shall be provided a top and bottom to facilitate conduit connection.

L. MCBs shall be provided on the phases of each circuits. Individual banks of MCB's shall be detached. There shall be ample space behind the backs of MCB's to accommodate all the wiring. All the DB's shall be completely factory wired, ready for connections.

M. All the terminals shall have adequate current rating and size to suit individual feeder requirement.

N. All circuits shall be distinctly marked/ferruled with description of service installed.

O. All the circuits shall have an independent neutral insulated wire, one per circuit, and shall be numbered and marked.

P. Sample of the finished DB shall be got approved by the Employers' representative before bulkfabrication and supply.

Q. Enclosure - The Enclosure system shall be IP54 duly provided with Neoprene gasket sealing arrangement with nut free assembly.

1.6 Sheet Steel Treatment And Painting

A. Sheet Steel materials used in the construction shall undergo a rigorous rust proofing process comprising of alkaline degreasing, de-scaling in dilute sulphuric acid and a recognized phosphating process. The steelwork shall then receive two coats of oxide fill primer before final painting as specified or powder coated as per BOQ.

B. All sheet steel as well as the angle iron frame shall after metal treatment be given powder coated finish painted with two coats of approved shade to on the outside and white on the inside. Each coat of paint shall be properly stove and the paint thickness shall not be less than80 microns.

1.7 Name Plates And Labels

A. NAMEPLATES

Each Electrical Panels shall have permanently attached to it in a conspicuous position labels upon which shall be engraved or stamped with the Station Name, Type and serial number, date of manufacture, designation of each Electrical Panels, details of the loading and duty at whichthe item of the Electrical Panels has been designed to operate. Such labels shall be of non- hygroscopic material. Detail of Name Plate shall be submitted for review

and approval of Engineer.

B. LABELS

1. Labels shall be provided for every panel to describe the duty of or otherwise identify every instrument, relay or item of control equipment mounted externally and internally.

2. The designation on these labels shall be clear and shall, where applicable, incorporate the device number along with concise descriptive wording in English.

3. Externally fitted panel labels shall be of Perspex or other approved transparent plastic with letters and numbers rear engraved and filled with black.

4. Internally fitted panel labels shall be finished in white with engraved letters and numbers filledwith black, laminated material such as Trifoliate or rear engraved and filled plastic may be used. Embossed materials and techniques will not be accepted or any latest technology which provides same result as mentioned above shall be applicable.

5. Labels shall be provided in conformity with the above requirements or by other approved means wherever necessary to designate panels or panel sections. To describe or identify circuits or circuit components, to provide warnings or reminders of dangerous or potentially dangerous circumstances and wherever called for elsewhere in this Specification.

6. Safety labels "Danger 415 V in both English and Hindi shall be provided on both the front and rear of the Electrical Panels. The safety labels shall have graphic symbols exactly as per IS standards. The design of all such signs shall be submitted for approval. Similar labels shall be provided for other panels at different voltages.

7. Labels shall not be less than 45 mm high. Lettering shall be of not less than 10 mm high. All labels shall be securely fixed to the panels by bolts and nuts.

8. Details of proposed inscription, including the English and Hindi wordings, and samples of the labels shall be submitted for approval before any labels are manufactured. 9. Circuit labels, one on the front of the panel and one on the rear of the panel suitably engraved1.8.

1.8 Material And Manufacturing:

A. All similar items of the Electrical Panels and their component interchangeable. Spare part shallbe manufactured originals and shall fit all similar items of the Electrical Panels. Where machining may be needed before fitting renewable parts, the machining fits and the associated tolerances shall be shown on the drawings by Vendor accompanying the instruction manuals.

B. All parts which are susceptible to wear or contaminated by dust shall enclosed proof housings.

C. The style and finish of the workmanship shall be consistent throughout the Works. Unless otherwise specified, Engineer shall decide the final colours for all paint work and other finishesto be applied to the Electrical Panels

1.8.1 Installation

A. DBs shall be fixed with bottom at minimum 500 mm from finished floors or depending upon the site condition. DBs shall be fixed properly, fitted square with the frame and with holes correctly positioned. DBs shall be fastened to the walls with suitable grouted studs of not lessthan 12-mm diameter.

B. All distribution boards shall be mounted on wall or recessed, with necessary angle iron framework. All mounting frames shall have one prime coat and two finish coats after the completion of the work. All distribution boards shall be touched up for damaged painting.

C. All boards shall be meggered phase to phase and to neutral using 1000/500V megger with all switches in closed position. The megger value should not be less than 2.5 MΩ between phasesand 1.5 MΩ between phase and neutral.

D. Fabrication drawings of all boards shall be approved by the Employer or his Engineer before fabrication and the boards will be inspected before dispatch unless waived in writing.

1.8.2 Testing & Inspection

A. Copies of type tests and routine test as per relevant specification, carried out at manufacturer'swork shall be submitted to the Employers' representative as required. Wiring and connectionsshall be checked for continuity.

B. Tests as required shall be performed in presence of authorized representative of the Employers' representative for which the contractor shall give due prior notice.

C. Test reports shall be furnished by the contractor in approved formats only.

D. Pre-commissioning inspection:

The following checks shall be carried out before commissioning distribution boards certifyingthat:

i. Erection is complete in all respect including earthing.
ii. Opening in floor within and outside panels have been sealed off and all cover and doorgaskets are intact to make the enclosure dust and vermin proof.
iii. All metering instrument have been checked and calibrated.
iv. Indicating lamps are healthy and in proper position.
v. Ratio test of all the CTs is satisfactory.
vi. Wiring continuity and correctness are ensured in the protection and metering circuits.
vii. IR values have been found satisfactory and recorded for bus bars, circuit breakers,incoming and outgoing cables.
viii. Resistance of bus joints has been checked and recorded as satisfactory.

SECTION: E.02

1. MEDIUM VOLTAGE CABLING

1.1 Scope

A. The scope of work shall cover supply, laying, connecting, testing and commissioning of low andmedium voltage power and control cabling.

1.2 Standard

A. All equipment's, components, materials and entire work shall be carried out in conformity withapplicable and relevant IS/BS/IEC Standards and Codes of Practice. In addition relevant clauseof Indian electricity act 2003 and Indian electricity rule 1956 amended up to date shall apply.

B. It is to be noted that updated and current standards shall be applicable irrespective of dates mentioned along with IS Code in the tender documents.

IS:1554 (Part-I) – 1988	PVC insulated (heavy duty) electric cables 1.1kV insulated rating
IS:7098 Part-I 1988	Cross-linked polyethylene insulated PVC sheathed cables 1.1kV insulatedrating
IS 8130 – 1984	Conductors for insulated electric cables and flexible
cordsIS 10418 –1982	Drums for electric cables
IS 10810	Methods of test for cables (All latest)
IS 3961	Recommended current rating for cables (All latest)
IS 5891–1970	Recommended short circuit rating of high voltage PVC cables
BS:7671 – 2001	Requirements for electrical installations. IEE Wiring Regulations -Sixteenth edition.

C. Codes and standards mean the latest. Where not specified otherwise the installation shall generally follow the Indian standards/British Standards Codes of Practice/IEC standards.

D. All conductors shall be stranded. Refer the BOQ for section of Cables for particular Use

1.3 Abbreviations

S. No.	Abbreviation	Description
1.	PVC	Poly-vinyl Chloride
2.	XLPE	Cross-Linked Polyethylene
3.	FRLS	Flame Retardant Low Smoke
4.	LV	Low Voltage
5.	MV	Medium Voltage
6.	HV	High Voltage
7.	HT	High Tension
8.	MS	Mild Steel
9.	GI	Galvanized Iron
10.	RCC	Reinforced Cement Concrete
11.	UPVC	UnPlasticised Poly Vinyl Chloride
12.	FR	Flame Retardant

1.4 Delivery, Storage and Handling

A. All cables shall be new without any kinks or damage marked with, manufacturer's name, insulating material, conductor size and voltage class on cable surface at every 1000mmapprox.

B. Cable drum conforming to IS: 10418 shall be stored on a well-drained, well-ventilated area protected from sun and rain on hard surface, preferably of concrete, so that the drums do notsink in ground causing rot and damage to the cable drum.

C. During storage, periodical rolling of drums, in the direction of arrow marked on the drum, shallbe done once in 3 month through 90°. Both ends of cables shall be properly sealed to preventmoisture ingress. Storage and handling shall conform to section 7 of IS1255

D. Drums shall always be rested on the flanges and not on flat sides. Movement of drums shall always be in direction of the arrow marked on the drum. For transportation over long distance,the drums shall either be mounted on drum wheels, trailers and pulled by ropes, unloaded preferably by crane and rolled down carefully on suitable ramps. While transferring cable formone drum to another, the barrel of the new drum shall have diameter not less than the originaldrum.

1.5 Cables

A. PVC Cables

i. Medium voltage cables shall be aluminium/copper conductors PVC insulated, PVC sheathed with flame retardant low smoke (FRLS) and armoured conforming to IS:1554Part-I. Cables shall be rated for 1100 Volts. Conductors shall be insulated with high quality PVC base compound.

ii. The conductor of all cables from shall be stranded. Sector shaped stranded conductorsshall be used for cables of 50-sqmm and above.

B. XLPE Cables

i. The cables shall be 1100 Volt grade XLPE insulated with PVC inner sheath steel armouring and with an outer protective sheath of flame retardant low smoke (FRLS) compound, conforming to IS: 7098 (Part I). Cables shall have high conductivity stranded aluminium or copper conductors and cores colour coded to the Indian Standards.

ii. A common covering (bedding) shall be applied over the laid up cores by extruded sheath of unvulcanised compound. Armouring shall be applied over this extruded sheath. The outer sheath shall bear the manufacturer's name and trade mark at everymeter length. Cores shall be provided with following colour scheme of PVC insulation

1 Core	:	Red/Black/Yellow/Blue
2 Core	:	Red and Black
3 Core	:	Red, Yellow and Blue
3 ½ /4 Core	:	Red, Yellow, Blue and Black

1.6 Installation

A. While shortest practicable route shall be preferred, cable runs shall follow fixed developmentsuch as roads, footpaths etc. with proper offsets so that future maintenance and identificationare rendered easy.

B. Whenever cables are laid along well demarcated or established roads, the LV/MV cables shallbe laid further from the line than HV cables.

C. Cables of different voltages and also power and control cable shall be kept in different trencheswith adequate separation. Where available space is restricted, LV/MV cables shall be laid above HV cables.

D. Where cables cross one another, the cables of higher voltage shall be laid at a lower level thanthe cables of lower voltage.

E. Power and communication cables shall as far as possible, cross at right angles. Where power cables are laid in proximity to communication cables the horizontal and vertical clearances shall not normally be less than 600 mm.

F. Cables shall be laid in the routes marked in the drawings. Where the route is not marked, the contractor shall mark it out on the working drawings after deciding in consultation with Employer's representative. Cables shall be laid in masonry trenches, directly on walls / ceiling,inside shafts / cable trays, directly buried in ground or in pipes/ducts as elaborated below. Cables of different voltages and also power and control cables shall be laid in different trencheswith adequate separation. Wherever available space is restricted such that this requirement cannot be met, medium voltage cables shall be laid above HT cables as approved.

G. Single cables laid shall be fixed directly to walls or ceiling and supported at not more than 600mm. Cables laid in built-up trenches shall be on GI supports.

H. Cables shall be so laid that the maximum bending radius is 12 times the overall diameter of the cable for medium voltage cables or in accordance with the manufacturer's recommendations whichever is higher.

I. In the case of cables buried directly in ground, the cable route shall be parallel or perpendicularto roadways, walls etc. Cables shall be laid in an excavated, graded trench, over a sand or softearth cushion to provide protection against abrasion. Cables shall be protected with brick or cement tiles as shown on Drawings. Width of excavated trenches shall be as per code of practice and drawings.

J. The general arrangement of cable laying shall be as per drawings. All cables shall be full runs from panel to panel without any joints or splices.

1.6.1 Cable laid on Trays/Walls

A. Where numbers of cables are run, necessary perforated cable trays shall be provided wherevershown. Ladder cable trays shall be galvanized MS as specified in the BOQ.

B. After laying and securing the cables in a cut-out, suitable water tight sealant shall be applied as per requirement to prevent any ingress of water.

C. Cables shall be secured in position and dressed properly by means of suitable clamps, hooks, saddles etc. Clamping of cables shall be at minimum intervals as below:

Type of Cables	**Size**	**Clamping by**	**Fixing intervals**
MV	Up to and including 25-sqmm	Purpose made, approved GI clamp minimum 2 mm thick, 19 mm wide	300 mm
MV & HV	35-sqmm to 120-sqmm	Clamps 3 mm thick 25 mm wide	-600 mm
MV & HV	150-sqmm and above	Clamps 3 mm thick 40 mm wide	-600 mm

Note : The fixing intervals specified apply to straight runs. In the case of bends, additionalclamping shall be provided at 30 cm from the centre of the bend on both sides.

1.7 Routing of the Cable Runs

A. Before cable laying work is undertaken, the route of the cables shall be decided in consultationwith the Employers' representative.

B. DBs shall be fixed with bottom at minimum 500 mm from finished floors or depending upon the site condition. DBs shall be fixed properly, fitted square with the frame and with holes correctly positioned. DBs shall be fastened to the walls with suitable grouted studs of not lessthan 12-mm diameter.

C. All distribution boards shall be mounted on wall or recessed, with necessary angle iron framework. All mounting frames shall have one prime coat and two finish coats after the completion of the work. All distribution boards shall be touched up for damaged painting.

E. All boards shall be meggered phase to phase and to neutral using 1000/500V megger with all switches in closed position. The megger value should not be less than 2.5 MΩ between phasesand 1.5 MΩ between phase and neutral.

F. Fabrication drawings of all boards shall be approved by the Employer or his Engineer before fabrication and the boards will be inspected before dispatch unless waived in writing.

1.8.3 Testing & Inspection

A. Copies of type tests and routine test as per relevant specification, carried out at manufacturer'swork shall be submitted to the Employers' representative as required. Wiring and connectionsshall be checked for continuity.

B. Tests as required shall be performed in presence of authorized representative of the Employers' representative for which the contractor shall give due prior notice.

C. Test reports shall be furnished by the contractor in approved formats only.

D. Pre-commissioning inspection:

The following checks shall be carried out before commissioning distribution boards certifyingthat:

i. Erection is complete in all respect including earthing.
ii. Opening in floor within and outside panels have been sealed off and all cover and doorgaskets are intact to make the enclosure dust and vermin proof.
iii. All metering instrument have been checked and calibrated.
iv. Indicating lamps are healthy and in proper position.
v. Ratio test of all the CTs is satisfactory.
vi. Wiring continuity and correctness are ensured in the protection and metering circuits.
vii. IR values have been found satisfactory and recorded for bus bars, circuit breakers,incoming and outgoing cables.
viii. Resistance of bus joints has been checked and recorded as satisfactory.

C. While shortest practicable route shall be preferred, cable runs shall follow fixed developmentsuch as roads, footpaths etc with proper offsets so that future maintenance and identificationare rendered easy.

D. Whenever cables are laid along well demarcated or established roads, the LV/MV cables shallbe laid further from the kerb line than HV cables.

E. Cables of different voltages and also power and control cables shall be kept in different trenches with adequate separation. Where available space is restricted, LV/MV cables shall belaid above HV cables.

F. Where cables cross one another, the cables of higher voltage shall be laid at a lower level thanthe cables of lower voltage.

G. Power and communication cables shall as far as possible cross at right angles. Where power cables are laid in proximity to communications cables the horizontal and vertical clearances shall not normally be less than 600 mm.

1.8 Laying Of Cables In Floors

A. Laying of cables directly in floors shall be avoided and GI pipes of adequate size shall be used wherever necessary. However if the cables have to be laid direct in the floor specific written approval of Employers' representative shall be obtained and the Contractor shall cut chases, lay the cables and make good the chases to original finish.

1.9 Cable Entry Into Buildings

A. Cable entry into buildings shall be made through RCC pipes recessed in the floor. RCC Hume pipes shall be provided well in advance for service cable entries. The pipe shall be filled with sand and sealed at both ends with bitumen mastic to avoid entry of water. Suitable size manholes shall be provided wherever required to facilitate drawing of cables as per requirements. The Contractor shall submit a written request to Employer's/Engineer's representative cabling for inspection of works for the following:

- On excavation and provision of sand bed at bottom of trench
- On laying of cables, and provision of sand bed over the cables
- On provision of protective cover & back filling
- On commencing termination of cable

These requests shall be serially numbered and shall be in an approved format out of one ortwo formats to be submitted by the Contractor.

1.10 Cable Joints

A. Cable joints shall be resorted to and permitted only if length of cable route is more than standard cable drum length. Cable joints shall not be permitted in any other circumstances. Wherever unavoidable these joints shall be made with specific approval of Employers' representative, and shall from a part of cable run / laying. Cable Jointing shall be done only ofindicative make cable joints. No extra cost shall be paid for jointing of cables.

1.11 Cable Loops

A. At the time of the installation approximately 3 meters of surplus cable shall be left as below oras directed by Employer's representative or Engineer-in-charge.

- At each end of the cable
- on each side of underground straight through/tee/termination joints.
- at entries to buildings

This cable shall be left in the form of a loop.

B. Wherever long runs of cable length are installed cable loops shall be left at suitable intervals as specified by the architect/clients.

1.12 Termination / Jointing /Glands/ Ties Of Cables

A. All cable terminations should be nut-bolt type, irrespective of the cable size and shall have tinned copper compression lugs. The end terminations shall be insulated with a minimum of six half-lapped layers of PVC tape. Cable armouring shall be bonded at both ends.

B. Soldered jointing/termination shall be totally avoided. Solder-less terminations by using crimping tools, suitable lugs and double compression brass glands shall be used. In the case ofaluminium conductors, it is to be ensured that the conductor oxidation is cleaned by means of emery paper and then a thin coat of tin is applied before termination.

C. Armour Termination shall be by means of mechanical cable glands. For armoured cables the glands shall have an earth bond attachment. For cables with conductors larger than 35mm theearth termination shall be integral with the body of the gland. Glands used with aluminium armoured cables shall be of aluminium, but for all other situations they shall be of brass, unlessotherwise indicated.

D. The cables shall be tied through locking belts after 2 meters each for keeping the cables intactin case of trefoil formation. At locations, where there is change of level of laying, the cables shall be tied through locking belts after 1 meter each. These locking belts shall be strong enough to keep trefoil formation intact for entire life of cable. Heavy duty cable ties of width 30 mm (min) may also be used with the approval of engineer. The contractor can propose additional steps to ensure that cables remain in trefoil formation for life time.

1.13 Identification Tags

Plastic/Metal identification tags shall be provided at every 30m. Cables shall be identified at end terminations indicating the feeder number and the Panel/Distribution board from where it is being laid

1.14 Testing

A. Tests at Manufacturer's Works

i. Type tests – Type test results as per the relevant standards mentioned herewith shall be submitted along with the vendor approval request. In case the engineers desires, arepeat of the type test from the accredited lab may be asked for.
ii. FRLS, PVC insulated Cables shall be subjected to type tests and acceptance test at manufacturers work as per IS:1554 Part-1 1988 (Latest Amendment) carried out in accordance with appropriate parts of IS: 10810.FRLS, XLPE cables shall be tested as perIS: 7098 Part-1 (Latest Amendment) and IS: 10810. Copies of the type test reports shallbe furnished by the contractor.
iii. Routine test - PVC Cables shall be subjected to routine test as per IS: 1554 and XLPE cables as per IS:7098 including:
    a) Conductor resistance test
    b) High voltage test at room temperature.

Copies of routine tests carried out at manufacturers works shall be furnished along with the cables.

Acceptance Test for XLPE and PVC shall be carried as per the proforma given at annexureA of this specification. The prescribed values as per relevant IS and type results as available on record shall preferably filled by inspecting official before the inspection.

B. Testing at Site

i. Before laying - All cables before laying shall be pressure tested for one minute with 1000 volts megger. Cable cores shall be tested for continuity, absence of cross phasing, insulation resistance to earth/sheath/armour and insulation resistance betweenconductors.

ii. MV cables shall be tested upon installation with a 500V Meggar and the followingreadings established:

a) Continuity on all phases

b) Insulation Resistance between conductors and between all conductors and ground

C. All test readings shall be recorded and shall form part of the completion documentation.

D. Test at Site after receipt and installation shall be carried as per the proforma given at annexure All type, acceptance and site test readings records shall form part of the completion documentation. Underground Cable routes shall be got verified with the help of cable detector.

2. TECHNICAL LITERATURE AND TEST CERTIFICATES TO BE FURNISHEDBYCONTRACTOR

A. Contractor shall furnish following minimum technical particulars:

i. Name of manufacturer
ii. Standard governing specification
iii. Manufacturer's type designation
iv. Rated system voltage in kV
v. Rated continuous current in amps
vi. Max. permissible current in amps at 40°C
vii. Short circuit current for 1 sec. in kA
viii. Minimum permissible bending radius in mm
ix. Overall diameter of cable/wire in mm
x. Max. permissible length of cable in drum
xi. Weight of cable and drum including cable
xii. Resistance of Conductor/100m length
xiii. High voltage with-stand test result in kV
xiv. Insulation resistance
xv. Thickness and material of

a. Insulation
b. Inner sheath
c. Armouring
d. Outer Sheath.

xvi. Compound used for FRLS properties

xvii. Chemicals used for protection against rodent and termite attack.

xviii. Shelf life of cable accessories for the ambient temperature specified.

xix. Catalogues and brochures giving technical and physical details of the cable such ascurrent rating, de-rating factors, etc.

xx. Type test certificates and special test results for cables offered.

xxi. Shelf life of cable accessories for the ambient temperature specified.

xxii. Type test certificates for cable & accessories.

xxiii. De-rating factor with the proposed method of cable laying

SECTION: E.03

1. CONDUIT WIRING

1.1 Scope

The scope of work shall cover supply, installation testing and commissioning of all wiring in conduit and related works, earthing of distribution/sub-distribution boards, plug sockets etc. and protection against lightning.

1.2 Standards

The following standards and rules shall be applicable

IS: 1554 Part-1 1988 (Amendment no. 1 of 1994)	PVC insulated (heavy duty) electric cables: For working voltages up to andincluding 1100 V
IS: 694 – 1990 (Reaffirmed 2005)	PVC Insulated cables for working voltages up to and including 1100 Volts– specification
IS 9537 : Part 1 : 1980	Conduits for electrical installations: Part 1 General requirements
IS 9537 : Part 2 : 1981	Conduits for electrical installations: Part 2 Rigid steel conduits
IS 9537 : Part 3 : 1983	Conduits for electrical installations: Part 3 Rigid plain conduits of insulating materials
IS 9537 : Part 4 : 1983	Specification for Conduits for Electrical Installations - Part 4 : Pliable Self- recovering Conduits of Insulating Materials
IS 9537 : Part 5 : 2000	Conduits for Electrical Installations - Part 5 : Pliable Conduits of Insulating Material
IS 9537 : Part 6 : 2000	Conduits for Electrical Installations - Specification - Part 6 : Pliable Conduits of Metal or Composite Materials
IS 9537 : Part 8 : 2003	Conduits for Electrical Installations - Specification - Part 8 : Rigid Non- Thread able Conduits of Aluminium Alloy
IS 3837: 1976	Accessories for rigid steel conduits for electrical wiring
IS 3480: 1966	Flexible steel conduits for electrical wiring
IS 4615: 1968	Switch socket outlets (non-interlocking type)
IS 3854: 1997	Switches for domestic and similar purposes
IS 1644: 1988	Code of practice for fire safety of buildings (general): Exit requirements and personal hazard
IS 1646: 1997	Code of practice for fire safety of buildings (general): Electrical installations

IS 732: 1989	Code of practice for electrical wiring installations
IS: 1387-1993	General requirements for the supply of metallurgical materials
IS:800-1984	Code of practice for general construction in steel
IS:5-2004	Colours for Ready Mixed Paints and Enamels
IS:2551-1982	Danger notice plates
IS:5578-1984	Guide for marking of insulated conductor

IS:2675-1983	Enclosed distribution fuse boards and cut-outs for voltages not exceeding 1000 V Ac and 1200 V Dc
IS: 2667-1988	Fittings for rigid steel conduits for electrical wiring
IS: 1255- 1983	Code of practice for installation and maintenance of power cables up to and including 33 kV rating
IS:3961	Recommended current ratings for cables
IS: 1079	Hot Rolled Carbon Steel Sheet and Strip Specifications
IS: 209	Zinc Ingot- Specifications
IS: 2629	Recommended Practice for hot-dip galvanizing of Iron and Steel
IS: 60529	Degrees of protection provided by Enclosures (IP Code)
IS: 60309 : Part 2	Plugs, Socket-Outlets and Couplers for Industrial Purposes : Part 2: Dimensional Interchangeability Requirements for Pin and Contact-Tube Accessories
IS: 4736 : 1986	Specification for Hot-dip Zinc coating on mild steel tube
IS: 6745 : 1972	Methods For Determination of Mass of Zinc Coating on Zinc Coated Iron and Steel Articles
IS: 14772 : 2000	General Requirements for Enclosures for Accessories for Household and Similar Fixed Electrical Installations – Specification
IS: 3854 : 1997	Switches for domestic and similar purposes
IS: 1293 : 2005	Plugs And Socket-Outlets of Rated Voltage up to and Including 250 Volts And Rated Current up to and Including 16 Amperes
IS: 732 : 1989	Code of practice for electrical wiring installations
IS:14768 : Part 1 : 2000	Conduit fitting for Electrical installations : Part 1 General requirementsIS:14768 : Part 2 : 2003Conduit fitting for Electrical installations : Part 2 Metal Conduit fitting
	Indian Electricity Act 2003 and IE Rules 1956 as amended from time to time
	Regulations for the electrical equipment in buildings issued by the TariffAdvisory Committee of the Insurance Association of India
	National Building Code 2016.

Central Electricity Authority (Measures relating to Safety and ElectricitySupply) Regulations, 2010

All standards and codes mean the latest

1.3 Abbreviations

S. No.	Abbreviation	Description
1	PVC	Poly-vinyl Chloride
2	XLPE	Cross-Linked Polyethylene
3	FR	Fire Retardant
4	FRLS	Flame Retardant Low Smoke
5	MS	Mild Steel
6	GI	Galvanized Iron

IS:60309:Part1 Plugs, Socket-Outlets and Couplers for Industrial

2. CONDUITING

2.1 Steel Conduits

A. Conduit shall be galvanized steel with wall thickness (with tolerance as defined in IS) of 1.6mm up to 32mm diameter and 2.0mm for sizes above 32mm diameter, electric resistance welded (ERW), electric threaded type, with both ends screwed having perfectly circular tubing. Conduits shall show no appreciable unevenness and shall be free from burrs, fins and the like which may cause damage to cable insulation. These rough internal edges shall be removed bymeans of a proper reamer. Conduits shall be precision welded and shall be fabricated from tested steel strips of required thickness by electric resistance welding. Welds shall be smooth and consistently of high quality to ensure crack proof bending. The conduit shall be galvanized according to IS 4736-1986. All conduits used in this work shall be marked according to IS: 9537Part-2 and also with ISI certification mark. Other requirements for the conduits shall be as perIS: 9537, Part-1 and Part-2.

B. Flexible conduit shall be restricted to only those areas where it is not possible to use Rigid Steel Conduits. Steel Conduit Connections. Flexible conduit shall be galvanized with PVC quote to prevent from rust.

C. Connections between steel conduits shall be with screwed couplers of approved quality and finish, ensuring screwed metal to metal contact. Length of threads in all cases of joints shall bebetween 13 mm to 19 mm and sufficient to accommodate pipes to full threaded portion of couplers or accessories. Threads and sockets shall be free from grease and oil. Connections between screwed conduits and sheet metal boxes shall be by means of G.I hexagon check nut fixed both inside and outside the box. Joints in conduits and terminations shall be free of burrs and bushes shall be provided to avoid damage to insulation of conductors while pulling them through the conduits. Connections between GI, if required, shall be through a junction box andnever directly.

D. Bends - As far as possible, the conduit system shall have minimum use of tees, elbows and sharp bends. A conduit length shall not have more than the equivalent of two quarter bends between two junction or draw boxes. These shall be galvanized. Right angle bends (as per IS: 14768 but more than 75mm radius) or non-right angle bends (as per IS: 14768) in conduits runsshall be made by means of conduits bending machines carefully so as not to cause any crack in the conduit. Small right angle bends in conduits runs can be made by standard conduit accessories (solid/inspection bends/elbows). Facilities such as draw-in boxes must be providedso that cables are not drawn round more than two right-angle bends or their equivalent. The radius of bends must not be less than the standard normal bend. Bends in multi runs of conduits shall be parallel to each other and neat in appearance, maintaining the same distanceas between straight runs of conduits.

E. Standard Conduit Accessories - Standard conduit accessories like bends, tees, junction boxes, pull boxes etc. shall be heavy duty, Galvanized as specified in BOQ. The accessories shall conform in all respects to the relevant ISS. Samples shall be got approved through Employers' representative before use. Only galvanized accessories shall be used with galvanized conduits.

F. Sheet Metal Outlet/Draw/Inspection/Junction Boxes

G. Wherever required, outlet boxes of required sizes, approved quality, finish and manufacture, shall be galvanized and fabricated from 1.6 mm thick MS sheets excepting ceiling fan outlet boxes which shall be fabricated from minimum 2 mm thick sheets. All outlet boxes shall be provided with an earth stud. The boxes shall be protected from

rust by zinc phosphate primerprocess. Where not galvanized as specified, for concealed conduiting work, boxes with primarily could be embedded while for surface conduiting work, the boxes shall be finished with minimum one coat of enamel paint of approved colour or electro galvanized. The outlet boxesshall be so protected at the time of fixing that no mortar find its way inside during concrete filling or plastering. For concealed conduiting work, outlet boxes shall be completely embedded in walls/ceilings leaving edges flush with finished wall/ceiling surface.

H. Boxes suitable to house modular type switches/sockets of required ratings, and fan regulatorsas required shall be provided. In case the number of switches in one box is not tallying with that available in standard manufacture, the box accommodating the next higher number of switches shall be provided without any extra cost. In case fan regulator/regulators is /are to be provided at a later date, suitable provision for accommodating such regulators shall be made in the switch boxes and blank off covers shall be provided without any extra cost. The outlet boxes shall be of MS having external and internal surface true to finish. All boxes shall have adequate number of knock out holes of required diameter and earth stud. Unless otherwise stated boxes shall be located with bottom at 1200 mm above finished floor level.

I. Circular type / square box as per required conduit sizes, and as per relevant IS of makes shall be provided. For ceiling mounted LED fittings, the boxes shall be provided 300 mm off centre for a 1200 mm fitting and 150 mm off centre for a 600 mm fitting or to suit the fitting entry points so that the wiring is taken directly to the down rod. 3 mm thick Perspex / hylam sheet cover of matching colour shall be provided.

J. Outlet boxes for ceiling fans shall be fabricated from minimum 2 mm thick MS sheet steel. Theboxes shall be hexagonal in shape of minimum 100 mm depth and 60 mm sides. Each box shallbe provided with one 'U' shaped 15 mm diameter rod inside securely tied to the top reinforcement of the concrete stab for a length of minimum 150 mm on either side. 3 mm thickPerspex / hylam sheet cover of matching colour shall be provided.

K. Draw Boxes: Draw boxes of Circular type / square box as per required conduit sizes, and as perrelevant IS of makes as required shall be provided at convenient locations to facilitate drawingof long runs of conductors. These shall have covers of 3 mm thick Perspex / hylam sheet.

L. Inspection Boxes / Junction Boxes: Inspection boxes of Circular type / square box as per required conduit sizes, and as per relevant IS of list of makes shall be provided at suitable location in conduit runs to permit inspection and maintenance. These shall have covers of 3 mm thick Perspex / hylam sheet.

M. Hardware and screws shall be cadmium plated brass with counter sunk heads, where as required.

N. In a galvanized conduit installation, only galvanized boxes shall be used.

2.2 Laying of Conduits

A. Conduits shall be laid either concealed in walls and ceilings or on surface on walls and ceilingsor partly concealed and partly on surface, as required. Same rate shall apply for concealed andsurface conduiting in this contract. Conduits shall be kept at a minimum of 100 mm from the pipes of other non-electrical services.

B. Conduit routes shall be chosen for easy, straight runs with a minimum of bends and crossing. Generally they shall follow the structure of building, running at right angles or in parallels to floors and ceiling.

C. Outlets boxes for housing accessories shall be used as draw boxes. The total number of draw boxes shall be kept to a minimum and shall be provided so that conduits runs do not exceed 8m or more than two right angle bends.

D. Conduits from different distribution boards shall not be connected to the same junction box. Each run of conduit shall be assembled complete with draw in wires.

E. The entire conduit system including outlets and boxes shall be thoroughly cleaned after completion of erection and before drawing in of cables. For cast in-situ conduits, it shall be checked for freedom from blockage and continuity as soon as the shuttering is removed. All conduit shall be swabbed through before wiring is commenced and cables hall not be drawn into any section of the system until all conduits and draw boxes for that particular section arefixed in position.

F. Fixing arrangement: The rigid steel conduits shall be fixed at an interval of 50 cm on the wall /ceiling by heavy gauge saddles secured to expansion fasteners on platforms and in service areas such as substation, S&T equipment room and pump house. The inter-saddle spacing shall not be more than 50 cm, but spacing from fittings shall not be more than 30 cm (measuredfrom the centre of the fitting). In passenger areas such as entrance hall, concourse, sub-way and in operational area at non false ceiling areas, the conduits shall be embedded in the ceilingat the time of construction, & shall be recessed in a chase in the wall which shall be filled up neatly after erection of the conduit.

G. Conduit joints: Conduit pipes shall be joined by means of screwed couplers and screwed accessories conforming to IS: 2667. In long runs of conduit, inspection type coupler and accessories shall be provided at reasonable intervals. The threaded portion on conduit pipe shall be between 11 mm and 27 mm. The threaded portion shall be treated with anti-corrosivepreventives. Cut ends on conduit pipes shall be bur-free to avoid any damage to insulation of conductor.

H. Separate conduits / raceways shall be used for each of the following:

   i. Normal lights and 6A 3-pin sockets on lighting circuit
   ii. Power outlets - 16A 3-pin, 20A / 30A 2-pin + scraping earth metal clad sockets
   iii. Emergency lighting
   iv. Telephones

I. Conduit layout shall be generally as indicated on drawings and the layout shall be supplemented and complemented by contractor on site with the approval of the Employer's representative. Allowance for adjustments due to site conditions shall be provided with no extra cost.

J. The conduits shall be of ample sectional area to facilitate simultaneous drawing of wires and permit future provision also. Conduit fill shall not exceed 40%. No wires installed in conduits shall be laced. Maximum number of PVC insulated 1100 Volt grade copper conductor wires shall be as per table given below:

	20 mm		25 mm		32 mm		38 mm		51 mm		64 mm	
Nominal Cross Sectional area of conductor in sq. mm	**S**	**B**	**S**	**B**	**S**	**B**	**S**	**B**	**S**	**B**	**S**	**B**
1.5	5	4	10	8	18	12	-	-	-	-	-	-
2.5	5	3	8	6	12	10	-	-	-	-	-	-
4	3	2	6	5	10	8	-	-	-	-	-	-
6	2	-	5	3	4	8	7	-	-	-	-	-
10	2	-	4	3	6	5	8	6	-	-	-	-
16	-	-	2	2	3	3	6	5	10	7	12	8
25					3	2	5	3	8	6	9	7
35							3	2	6	5	8	6
50									5	3	6	5
70									4	3	5	4

The above table shows the maximum capacity of conduits for a simultaneous drawing in of cables. The columns headed 'S' apply to runs of conduits which have distance not exceeding
4.25 m between draw boxes and which do not deflect from the straight by an angle of more than 15 degrees. The columns headed 'B' apply to runs of conduit which deflect from the straight by an angle of more than 15 degrees. Conduits sizes are the nominal external diameters.

2.3 Concealed Conduiting

A. Concealed conduits in concrete members shall be laid before casting as specified in detail drawings, and as may be instructed, so as to embed the entire run of conduits and ceiling outlet boxes with a cover of minimum 12mm concrete. Conduits shall be adequately tied to the reinforcement to prevent displacement during casting at intervals of maximum 1 meter. No reinforcement bars shall be cut to fix the conduits. Suitable flexible joints shall be provided atall locations where conduits cross expansion joints in the building.

B. Concealed conduits in brick work shall be laid in chases to be cut by electrical Contractor in brick work before plastering. The chases shall be cut by a chase cutting electric machine. The chases shall be of sufficient width to accommodate the required number of conduits and of sufficient depth to permit full thickness of plaster over conduits. The conduits shall be securedin the chase by means of suitable clamps at intervals of maximum 1 meter. The chases shall then be filled with cement and coarse sand mortar (1:3) with 0.6-mm thick 10-15mm aperturegalvanized chicken wire mesh for bonding.

C. Entire concealed conduit work in concrete members and in brick work shall be carried out in close coordination with progress of civil works. Should it become necessary to embed conduits in already cast concrete members, suitable chase shall be cut in concrete for the purpose. Forminimizing this cutting, conduits of lesser diameter than

25 mm and outlet boxes of lesser depth than 50 mm could be used by the Contractor for such extensions only ater obtaining specific approval from Employers' representative. For embedding conduits in finished and plastered brick work, the chase would have to be made in the finished brick work. After fixingconduit in chases, chases shall be made good in most workmanlike manner to match with theoriginal finish.

D. Cutting chases in finished concrete or finished plastered brick work for embedding conduits and outlet boxes etc shall be done by the Contractors without any extra cost.

E. All the chases, as specified shall be properly finished and lined (as specified in BOQ) and covered with suitable openable cover, flushed to the surface, screwed/hinged as specified in BOQ.

2.4 Surface Conduiting

A. Conduits run on surfaces shall be supported through 1.6-mm thick metal saddles fastened on metal 6 mm thick steel bracket which in turn are properly screwed to the wall or ceiling. Saddles shall be at intervals of not more than 500 mm. Fixing screws shall be with round or cheese head and of rust-proof materials. Exposed conduits shall be neatly run parallel or at right angles to the walls of the building. Unseemly conduit bends and offsets shall be avoidedby using fabricated galvanized steel junction/pull through boxes for better appearances. No cross-over of conduits shall be allowed unless it is necessary and entire conduit installation shall be clean and neat in appearance.

2.5 Painting of Conduits and Boxes

A. All draw/switch/junction/fan-hook boxes shall be painted with red oxide/galvanized/zincpassivated in their manufactured form. All un-galvanized / un-plated boxes, conduits & accessories shall be again painted with red oxide paint as required before fixing. Boxes, conduits and associated accessories fixed on surface (if exposed) shall, in addition, be paintedwith finishing paint of approved colour and finish and make good the damages to the surface.

B. All metallic accessories shall be painted/cold galvanized at such places where paint has been damaged due to vice/ wrench grip/handling or any other reason.

2.6 Protection of Conduits

A. To safeguard against filling up with mortar/plaster etc. all the outlet and switch boxes shall be provided with temporary covers and plugs which shall be replaced by sheet/plate covers as required. The entire conduit system including outlets and boxes shall be thoroughly cleaned after completion of erection and before drawing in of cables.

B. Bends in conduit – All necessary bends in conduit system including diversions shall be done bybending pipes (by means of pipe bending machine) or by inserting suitable solid or inspectiontype normal bends, fittings / other accessories. Radius of bends should not be less than 7.5 cm. No length of conduit shall have more than equivalent of four-quarter bends from inlet to outlet.

C. Earthing - Continuous earth wire shall be provided for all points, outlets and sub-mains. Earthing terminals shall be provided inside all switch boxes, outlet boxes and draw boxes etc. The minimum size of earth conductor shall be 2.5-sqmm stranded insulated copper wire.

D. Wires

Wires for various purposes will be as follows:

(i)	Light points	2.5-sqmm multi-strand copper conductors or as specified in BOQ
(ii)	6/16A plug socket and group wiring of lighting circuits	4/6-sqmm multi-strand copper conductors or asspecified in BOQ

E. Material - Wires shall be FR PVC insulated with stranded copper conductors, unless otherwise stated, of 1100 Volt Grade. Special parameters of FR PVC insulation like critical oxygen index, temperature index, smoke density and flammability test shall conform to relevant IS/IEC and ASTM standards. All wires shall bear manufacturer's label and shall be brought to site in new and original packages. Manufacturer's certificate, certifying that wires brought to site are of their manufacture shall be furnished as required.

F. Bunching Of Wires - Wires carrying current shall be so bunched in conduits that the phase andneutral wires are drawn into the same conduit. Wires originating from two different phases shall not be run in the same conduit.

G. Drawing Of Wires - The drawing of wires shall be executed with due regard to the following:

H. No wire shall be drawn into any conduit, until all work of any nature that may cause damage to wires is completed. Care shall be taken in pulling the wires so that no damage occurs to theinsulation of the wire. Bushes shall be provided at conduit edges.

I. Before the wires are drawn, conduits shall be thoroughly cleaned of moisture, dust, dirt or anyother obstruction by forcing compressed air through the conduits if necessary.

J. While drawing insulated wires into the conduits, care shall be taken to avoid scratches and kinks, which could cause breakage of conductors. There shall be no sharp bends.

2.7 Termination /Jointing of Wires

A. Sub-circuit/ Sub-Main Wiring shall be carried out in looping system. Joints shall be made only at distribution board terminals, switches/buzzers and at ceiling roses/connectors/lamp holdersterminals of lights/fans/socket outlets. No joints shall be made inside conduits orjunction/draw/inspection boxes.

B. Wiring conductors shall be continuous from outlet to outlet. Joints where unavoidable, due to any specified reasons shall be made by approved connectors. Specific prior permission from Employers' representative in writing shall be obtained before making such joint.

C. Insulation shall be shaved off for a length of 15 mm at the end of wire and it shall not be removed by cutting it square or wringing. Strands of wires shall not be cut for connecting terminals.

D. Conductors having nominal cross sectional area up to 10-sqmm shall be cage clamped.

E. At all bolted terminals, brass flat washer of large area and approved steel spring washers shallbe used. Brass nuts and bolts shall be used for all connections.

F. The pressure applied to tighten terminal screws shall be just adequate, and should not dent ordamage or cut any strand of the conductor.

G. Switches controlling lights, fans, socket outlets etc. shall be connected to the phase wire of circuits only.

H. Only certified and licensed wire-men shall be employed to do wiring / jointing work.

I. Load Balancing - Balancing of circuits in three-phase installation shall be planned before the commencement of wiring and shall be strictly adhered to. Distribution of circuits in three phase installation shall be as per distribution chart indicated in drawings.

J. Colour Code Of Conductors - All wires shall be colour coded as follows:

Phase	Colour of Wire
R	Red
Y	Yellow
B	Blue
N	Black
Earth control, if any	Grey

2.8 Switches/Socket Outlets

A. Switches - All 6 and 16 amps switches shall be of modular flush, grid plate mounting type, unless otherwise stated, suitable for 250 volt AC supply, made of poly carbonate and of list ofmake. The switch moving and fixed contacts shall be of silver nickel and silver graphite alloy and contact tips coated with silver. Housing of switches shall be made from high impact resisting flame retarding and ultra violet stabilized engineering plastic materials. Switches shallbe fixed inside the box on adjustable galvanized grid with tapped holes cadmium plated brassmachine screws, leaving ample space at the back and side for accommodating wires.

Socket Outlets

A. 6/16 amps socket outlets shall be of modular , universal type, flush grid plate mounting type, unless otherwise stated, and shall be switched, three pin type and fitted with automatic linearsafety shutters to finger proof. Socket outlets shall be made from high impact resistant, flameretarding and ultra violet stabilized engineering plastic material.

B. Switches and sockets shall be located in the same plate. Plates for 6 amp switched/ un-switched power and telephone outlets shall be of the same size and shape.

C. An earth wire shall be provided along the wires feeding socket outlets for electrical appliances.The earth wire shall be connected to the earthing terminal screw inside the box. The earth terminal of the socket shall be connected to the earth terminal provided inside the box.

D. Flush Plates - Switches, socket outlets, receptacles etc. in walls shall be provided with polycarbonate moulded modular cover plates of approved colour, shape and size made from high impact resistant, flame retarding plastic and secured to the box with counter sunk /round

head cadmium plated brass screws unless otherwise stated. Where two or more switches areinstalled together, they shall be provided with one common switch cover plate as described above with notches to accommodate all switches either in one, two or three rows.

2.9 Lighting Fixtures: Not Used

2.10 Drawings

A. Before execution of works, the Contractor shall submit the copies of drawings which are necessary to ensure correct supply of equipment, components, fittings and material and to enable correct erection of the installation for satisfactory and trouble free performance as detailed in the specifications. All drawings for approval shall be prepared and submitted by theContractor in standard size as approved by engineer and multiples thereof as required by the employer's representative.

B. Revision and modification: Approval for any revision and / or modification in job specifications shall be taken from the Engineer/employer's representative before implementation.

C. Change in construction drawings: Any change required during and / or after approval of detailed construction drawings on account of functional requirements or in the interest of efficient running of the system, keeping the basic parameters unchanged, shall be carried outby the Contractor at no extra cost.

3. POINT WIRING

3.1 System of Wiring

A. Group wiring shall be used for the lighting circuits except for individual rooms and other smallcubicles where light points may be wired individually. Each group shall cater for a load of approx. 800 watts and wiring shall be done by looping - out at each fitting as per drawing.

B. The wiring shall be carried out strictly as per IE Rules / Indian Standard Code of Practice for electrical wiring installation IS: 732-1989. The wiring shall be done on distribution system withdistribution and sub-distribution boards located at convenient points.

C. FR PVC insulated, , single core, multi-stranded copper conductor of nominal size 2.5-sqmm shall be used for wiring of single light points, fans and 6 A plug sockets. Or as specified for group wiring of light points and 6A / 16 A plug sockets, the minimum conductor size used shallbe 4-sqmm nominal.

D. Parameters - Point wiring shall be carried out as per following parameters in concealed/surfaceconduit system unless otherwise stipulated.

E. Only looping system of wiring shall be adopted through-out. All accessories shall be flush typeunless otherwise stated.

F. For estimation of load, following loads per point shall be assumed:

1	Light points	As per load of fixture
2	6 Amps socket outlet points	100 Watts
3	Fan points	60 Watts

4	Exhaust fan points	300 Watts or as specified
5	16 Amp socket outlet points	1000 Watts

G. Light points, fan points and 6 amp socket outlet points may be wired on a common circuit. Each circuit shall not normally have more than a total of 10 numbers of light, fan or socket outlets and a load of 800 watts unless otherwise agreed by engineer. Wiring from DB to the first switch in each such circuit is defined as circuit wiring.

H. Power circuits shall normally have maximum two 16-amps socket outlet unless otherwise stated. Separate circuit shall be run for each geyser, kitchen equipment, window air conditioners and similar appliances.

I. Point wiring rates shall include painting of conduits and other accessories as required.

J. Point wiring rates shall include cleaning of dust, splashes of colour wash or paint from all fixtures, fans, fittings etc. at the time of taking over of the installation.

3.2 Sub-Main Wiring / Cabling

A. Sub-main shall comprise of stranded copper conductor, FR PVC insulated 1100 volt grade wires in GI conduits including loop earthing, terminations etc. complete as specified and required.

B. Sizes of conduits, number/ type/size of wires and loop earthing shall be as stipulated in the schedule of quantities and/or drawings. Wires shall be drawn in the concealed or surface

conduits as required, without being damaged. For this purpose, draw boxes shall be located atconvenient locations.

C. Every point wiring shall run in an independent conduit or otherwise specified by employer representative with an independent earth wire of PVC insulated stranded copper wire as specified running along the entire run of conduit. For single phase, one earth wire shall run and for three phase two earth wires shall run or as specified. Necessary provision of wire lengths entering and emerging from the conduit shall be made for connections.

D. Measurement shall be taken of the actual conduit run containing the wires from one point to the other.

3.3 Inspection, Checks And Tests

A. Prototype tests on electrical wire shall be submitted by the vendor seeking approval. Factory acceptance tests for wire shall be carried out by Contractor along with witness by NCRTC representative as per the proforma given at annexure A.

B. Checks before energization: On completion of works, the following checks shall be made before energization:

C. A general inspection shall be carried out by the Engineer or his authorized representative to verify that all works or parts thereof to be energized have been completed with high degree workmanship and all provisions of IE Rules-1956 (amended up-to-date) have been complied with.

D. A check shall be made that all the equipment, fittings, accessories, cables, wires and materialsare of adequate rating and conform to respective Indian Standards.

E. A check shall be made for adequacy of earth connections and for compliance of the

lightning protective system as per IS: 62305.

F. Pre-commissioning tests – The following tests shall be carried out before putting the installation into service.

G. Insulation resistance – The insulation resistance of the installation shall be tested. This shall not be less than 50 divided by the number of points in the circuit in mega ohms.

H. Earth continuity – The earth continuity of various circuits shall be checked along with Earth resistance and electrical continuity of lightning protective system.

I. Installation test of conduit wiring shall be carried out by Contractor along with witness by NCRTC representative during the process of installation and completion of the installation as per the proforma given at annexure B as stipulated in special conditions of contract.

J. Test Reports – Test reports shall be furnished by the Contractor in prescribed formats as required by the Chief Electrical Inspector, duly certified by authorized representative or the Engineer and clearance/permission obtained for energization of the installation.

K. Lighting installation – The lighting installation shall be tested as per approved schedule and theinstructions of the Engineer. The tests shall include but not be limited to the following:

L. Insulation resistance of each circuit shall be measured without the lamps being in place. It should not be less than value specified in clause G above.

M. Current and voltage of all the lighting circuits shall be measured at the sub-distribution boardwith all the lamps switched on to ensure that these are within designed values and in case of 3-phase circuits, the load shall be balanced, if required.

N. After inserting all the lamps and switching on all the circuits, minimum and maximum illumination levels shall be measured in all areas and their conformity with designed levels established. The test results shall be entered in the approved pre-commissioning proforma and submitted to the Employer's representative for approval before final commissioning.

O. Before commissioning standby supply, its phase sequence should be tested to ensure correct phase sequencing (from main & standby sources in all possible combinations).

3.4 Conduiting And Accessories Only

3.4.1 Scope

A. The scope of work shall cover supply and installation of conduiting and conduit junction boxesand accessories with pull wires (fish wires)

3.4.2 Conduits

A. Conduits shall be heavy gauge galvanized and shall generally be as specified under section “Conduit wiring”.

3.4.3 Cables and Wires

A. The type of cables and the services shall be as follows: (By others)

3.4.4 Indoor

A. Laid on wall or cable tray – Multipair, PVC insulated & armoured and sheathed and of specifiednumber of pairs.

B. Inside conduit – Twin core or 1 pair PVC insulated wire of specified diameter of conductor, datacommunication wires, music system wires etc.

C. Outdoor – Multipair PVC insulated jelly filled and armoured and with wires of specified diameter of conductor (by others).

D. All Multipair cables and wires shall have tinned copper conductor and with wires of specified diameter and shall be colour coded in twisted pairs and with a rip cord (by others)

3.4.5 Installation of Conduits and Accessories

A. The installation of conduits shall generally be as specified under section "Conduit Wiring".

B. The final branch connections with single pair cables by others shall be in conduits and the maximum number of cables in each conduits shall be as per clause 4.4. The contractor shall request for all necessary inputs on wiring and location of various systems before taking up conduiting works and prepare working drawings for approval.

Annexure A: Acceptance Test Report **(Format is indicative and will be reviewed by Engineer at the time of Conducting test)**					
Customer Name:					
P.O. No. & Date:					
Description:					
Specification: Relevant IS tomention 'IS 694:2010 & Data Sheet			**Specified Values**	**Type Test Values**	**Observed Values**
S. No.	**Test Descriptions**	**Unit**	**(Specified Valuesshall be as per IS 694:2010 and the Cable selected)**	**Type test Values shall be the same as submitted at the time of Vendor**	**DRUM/COIL No.:**
	Core Identification				
	Colour of Outer Sheath				
1	**Maximum size of Conductor**	mm			
2	**Conductor Resistance(ohms/km corrected at 20 °C)**	-			
3	**Annealing Test (for CopperWires After stranding)**				
4	**Thickness of Insulation**	mm			
5	**Thickness of Outer sheath**	mm			

6	**Overall dia of core**		mm			
	Test on insulation (as perIS-5831-1984)					
	Type of Compound					
7	i)	a) Volume resistivity(at 27 °C)	Ohm-cm			
		Volume resistivity (at 90 °C)	Ohm-cm			
	ii)	a) Tensile strength	N/mm^2			
		(Before ageing)				
		b) Elongation at break (Before ageing)	%			
8	**Test on Outer Sheath (as per IS- 5831-1984)**		-			
	Type of compound					
	i)	a) Tensile strength (Before ageing)	N/mm^2			
		b) Elongation at break (Before ageing)	%			
9	**Routine High Voltage test at R. temp.**					
10	**FR Test**		-			
	i)	Oxygen Index Test				
	ii)	Temperature Index Test	-			
11	**Flammability test**					
	i)	As per IS 10810 (Pt 53)				
	ii)	Time of burning after removal the flame				
	Date and Signature:					
		(Manufacturer)		(Contractor)		NCRTC representative)

Annexure B:

S. NO.	DESCRIPTION	REMARKS
Checks to be done before Drawing of Wire in Conduits as per the Specification forsupply & installation of conduits, associated fittings & accessories Specification		
1	Steel wire of 1.6 sqmm size shall be left in all conduit runs to facilitate drawing of wires	
2	Check for any mechanical stress on the conduit.	
3	Check for use of approved quality metallic flexible conduits at expansion joints of the building	
4	Check allowance for running earthing wire	
5	Conduit should be kept within 300mm of floors and ceiling when running parallel to them	
6	Ensure conduit runs must not exceed 8 m or have more than two right angle bends.	
7	Check conduits from different Distribution Boards must not be connected to same junction box	
8	Check the water tightness of the Conduit system as per the 'Method Statement including Tests' submitted by the contractor. As per the specification of conduit.	
9	Check the coupling used in conduit system, conduits must be coupled using couplers or via boxes	
10	Check the joints and terminations of the conduits, conduit-threads must not be exposed and if unavoidablethen must be treated	
11	Check the conduit bends as per approval given by the Engineer at site.	
	In Recessed Conduit and Outlet Boxes	
12	Ensure minimum of 12mm of concrete must cover the conduit and outlet box.	
13	Ensure that the conduit must be tied to the reinforcement with steel wire (dia 1.5 mm) at aninterval of maximum 1 m.	
14	Check the space between the concealed conduits entering the draw-in box must be minimum 25mm	
	In Case Of Conduit Recessed In Brick	
15	Ensure 10 mm space must be available between conduits and depth must be sufficient so that minimumthickness of plaster over conduit is 6 mm	

16	Check the Heavy duty pressed steel clamps screwed to MS flat strip saddled at maximum 600mm must beprovided where chase has been cut for conduiting	
17	EnsureGalvanisedChickenwiremeshof0.6mmthick with 10 to 15 mm aperture must be provided forfull	
	length of the chase in the plaster	
18	Ensure that all boxes for accessories and draw/junction boxes must have outer rim flushed in the finished surface, in case of concealed conduits	
	In Case Of Surface Conduiting	
19	Check for list of make spacer saddle at an interval not exceeding 600 mm and 300 mm from the fittings.	
20	Good quality of workmanship must be ensured in caseof surface conduiting	
21	Check that the loop earthing wire must be connected toa screwed earth stud inside outlet boxes to make aneffective contact with the metal body.	
22	Ensure that all outlets and switch boxes shall be provided with temporary covers and plugs before plaster and concreting work to safeguard against filling up with mortar/plaster etc.	
23	Check entire conduit system including outlets and boxes must be thoroughly cleaned after completion oferection and before drawing of wires.	
24	Check loop earthing is provided by means of insulated stranded copper conductor wires of sizes as per BOQ laidalong with wiring inside the conduits for all wiring outlets.	
Checks to be done after Drawing of Wire in Conduits as per the Specification forConduit Wiring of Elevated Stations		
25	Check the phase and neutral must be drawn in the same conduit.	
26	Ensure two different phases must not run in same conduit.	

27	Check the wiring, no joint must be present in the conduits or junction/draw/inspection boxes, exceptwith prior written approval from Engineer at site.	
28	Check all bolted terminals, brass approved flat washerof	
	large area must be used.	
29	Check that good quality heat shrinkable sleeves are used at the terminations.	
30	Check the switches controlling lights, fans, socketoutlets etc. must be connected to the phase wire of circuit only.	
31	Ensure bushes must be provided at the conduit edges and proper care must be taken so that no damage occurs to the insulation of the wire.	
32	Insulation resistance must be tested. This must not beless than 50 divided by the number of points in the circuit in mega ohms.(50/no. of circuits)	
33	Check the earth continuity ofvarious equipment installed.	
34	Measure current and voltage of all the lighting circuits at	
	the sub-distribution board with all the lamps switched on to ensure that these are within design values, in caseof 3 phase the load must be balanced reasonably.	
35	Measure the minimum and maximum illumination levels after installation of all the lamps along with the supplierof lamp/luminaries and shall and shall comply with the designed value	
36	Check the phase sequence to ensure correct phase sequence.	
*Note: The test for insulation resistance must be carried out when all the equipmentare disconnected from the circuit.		
Date & Sign		
	(Contractor)	NCRTC representative)

SECTION: E.04

1. PROTECTIVE EARTHING

1.1 Scope

A. The scope of work shall cover laying copper/GI earth strips and connecting the power panels, DBs, switch boards and other equipment's

B. The earthing protection is an integral part of any electrical system and is required to:

(i) Protect personal and equipment from electrical hazards.
(ii) Achieve a reduction in potential to the systems neutrals.
(iii) Reduce or eliminate the effects of electrostatic and electromagnetic interference on the Signalling and Telecom equipment arising from auxiliary electrical systems.

C. All the non-current carrying metal parts of electrical installation shall be earthed properly. All metal conduits, cable trays, trunking, cable sheaths, switchgear, distribution fuse boards, lightfittings and all other parts made of metal shall be bonded together and connected by means of specified earthing conductors to an efficient earthing system. All earthing shall be in conformity with Indian Electricity Rules.

D. The Earthing System shall totally comprise the following:

(i) Earthing Leads
(ii) Earth Conductors
(iii) Residual current earth leakage circuit breakers where applicable as per IE rules 61A

E. All three phase equipment's shall have two separate and distinct body earths and single phase equipment shall have a single body earth.

F. All the earthing strips/8swg wire shall be buried in floor or laid on wall/cable trays as required and all the fastening (by nut bolts) of earthing strips shall be tag welded as well.

1.2 Standards

A. The following standards and rules shall be applicable:

(i)	IS:3043 - 1987	Code of Practice for earthing
		Indian Electricity Act, 2003 and IE Rules, 1956 as amended
(ii)	IEEE 80: 2000	Guide for Safety in AC Substation Grounding

B. All codes and standards mean the latest. Where not specified otherwise the installation shall generally follow the Indian Standard Code of Practice or the British Standard Code of Practice in the absence of Indian Standards.

1.3 Earthing Material

A. Materials of which the protective system is composed shall be resistant to corrosion or be adequately protected against corrosion. Adequate margin for corrosion should be taken for the selection of the size. The material shall be as specified in the schedule of

quantities BOQ and shall comply to the following requirements:

B. Copper - When solid or stranded copper wire is used it shall be of the grade ordinarily required for commercial electrical work generally designated as being of 98% conductivity when annealed, conforming to Indian standard specifications.

C. Galvanized Steel - Galvanized steel used shall be thoroughly protected against corrosion by hotdipped Zinc coating. The material coating shall withstand the test specified in IS 62305 – 1989.

D. The strips to be used shall be in maximum lengths available as manufactured normally avoidingunnecessary joints.

1.4 Earth Stations

1.5 Earth Leads and Connections

A. The strip earthing leads shall be connected to the Earth Electrode / Earth mat at one end and to the main equipment at the other end. The earthing lead shall connect to the earthing network in the installation.

B. Earth lead shall be bare copper or galvanized steel as specified with sizes shown on approved working drawings. Copper lead shall have a phosphor content of not over 0.15 percent. Galvanized steel buried in ground shall be protected with bitumen and hessian wrap or polythene faced hessian and bitumen coating. At road crossings necessary Hume pipes or UPVC Pipes shall be laid. Earth lead run on surface of wall or ceiling shall be fixed on saddlesor wall so that the strip is at least 8mm away from the wall surface.

C. All earth strips shall be jointed as follows:

Galvanized	:	Lap welding with 50mm minimum lap Steel**:** Overlay - not lessthan 50 mm in all cases

D. Strip earthing leads shall be of copper/GI and as per specifications.

E. The buried strip earthing lead shall be in trench not less than 0.5 m deep. If conditions necessitate use of more than one earthing lead, they shall be laid as widely distributed as possible, preferably in a single straight trench or in a number of trenches radiating from one point.

F. In the case of plate earth electrode, the earthing lead shall be securely bolted to the plate withtwo bolts, nuts, check nuts and washers as required by IS 3043:1987. All materials used for connecting the earth lead with electrode shall be GI in case of GI Pipe and GI plate earth electrodes or tinned brass in case of Copper plate electrode.

1.5.1 Connection of Earthing Conductors

A. Main earthing conductors shall be taken from the earth connections at the substation to the earth bar at the main switch boards in the TN-S configuration and the earth bar may also be directly earthed as in Indian TN-S.

B. Sub-mains earthing conductors shall run from the earth bar at the main switch board to the sub-distribution boards and to the final distribution boards.

C. Loop earthing conductors shall run from the final distribution boards and shall be

connected to any point on the main/sub-main earthing conductor, or its distribution board.

D. Metal conduits, cable sheathing and armouring shall be earthed at the ends adjacent to switchboards at which they originate, or otherwise at the commencement of the run by an earth bonding conductor in effective electrical contact with cable sheathing. Switches, accessories, lighting fitting etc shall be effectively connected to the Loop Earthing Conductors. A metallic conduit shall not be considered as the only protective earth conductor.

E. Point wiring for lights, fans, ceiling fans, exhaust fans, 6A & 16A sockets and the like and sub- main wiring, shall all have an earth continuity conductor (ECC) with the same cross section andtype of wires used, the minimum in this case being 2.5-sqmm copper.

1.6 Prohibited Connections

A. 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 means of earthing an installation or even as a link in an earthing system. However, these are to be effectively earth bonded.

1.7 Resistance to Earth

A. 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 fuses or circuit breakers. The combined earth resistance of the earthing system should less than or equal to 1 ohm.

1.8 Equipment Earthing

A. All apparatus and equipment transmitting or utilizing power shall be earthed as per the drawings.

B. The earth continuity conductor may be drawn inside the conduit in which case, it should be insulated.

C. Metallic conduit shall not be accepted as an earth continuity conductor. A separate insulated/bare earth continuity conductor of size related to phase conductor shall be provided.Non-metallic conduit shall have an insulated earth continuity conductor of the same size as above. All metal junction and switch boxes shall have an inside earth stud to which the earth conductor shall be connected. The earth conductor shall be distinctly coloured (green) for easyidentification.

D. Armoured cables shall be earthed by 2 bonding earth connections to the armouring at both the ends and the size of connection being as above. In multiple cables entering a panel/DB, thecable joints shall be bonded together using a bonding wire selected on the basis of the largestsize of cable in the group. In the case of unarmoured cable, an earth continuity conductor shalleither be run outside along the cable. Three phase power panels and distribution boards shall have 2 distinct earth connections of the size correlated to the incoming cable size. In case of single phase DB's a single earth connection is adequate. Similarly for 3-Phase and 1-Phase isolating switches there shall be 2 and 1 earth connections respectively, sizes being correlatedto the incoming cable.

E. Three Phase motors and other 3-Phase apparatus shall have 2 distinct earth connections of size equal to incoming feeder size. For 1-Phase motor and 1-Phase apparatus, the single earthconnections shall be provided of the above size.

1.9 Material And Manufacturing

A. Quality Assurance and Controls: The Contractor's Management Systems shall emphasizequality assurance and controls. The programme shall be adequate to ensure an acceptable level of quality of the equipment supplied. The concept of total quality assurance shall be based on the principle that quality is a basic responsibility of the Contractor's organization, andshall be visible by:

(i) Firm procurement and job performance specifications.

(ii) Firm procedures for transmission of information and data to their Subcontractors and ensuring their compliance.

(iii) Adequate testing to ensure repetitive product conformity to design requirements and Total programme of surveillance and verification of physical performance and configuration accountability.

(iv) Adequate records shall be kept by the Contractor to provide evidence of quality and accountability. These records shall include results of inspections, tests, process controls, certification of processes and personnel, discrepant material, and other quality control requirements.

- The manufacturer shall ensure use of best manufacturing practice like quality of bends,no sharp corners, and no metallic parts with sharp edges, use of quality gasket at appropriate loss to damp vibrations and sealing etc.
- The manufacturer shall study the environmental pollution data prevailing near the Depot where its equipment is going be installed. The manufacturer shall take adequate precaution either during manufacturing or installation to prevent any damage to the equipment or loss of life arising due to prevailing pollution level.

1.9.1 Testing

A. The following earth resistance values shall be measured with an approved earth megger andrecorded.

i. Each earthing station

ii. Earthing system as a whole

iii. Earth continuity

SECTION: E.05

1. Façade Lighting (Light Fixtures)

1.1 Scope

The scope of work covers the Design, supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work including maintenance during 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC. The specification of LED light fixtures shall be as specified in BOQ/Price bid and as per design approved.

1.2 Testing And Commissioning

A. The lighting installation shall be tested as per approved schedule and the instructions of Engineer and shall include but not be limited to the following:

B. Earth continuity shall be checked for all the circuits.

C. The test results shall be entered in the approved pre-commissioning proforma and submitted to the Engineer for approval before final commissioning.

Annexure-2

LIST OF MAKES

A. Contractor shall use the material of make as listed below unless specified otherwise in BOQ and as approved by the Employer's representative. Contractor shall submit the proposal of each Vendor to review and Approval of Engineer even the make is enlisted.

B. The Contractor shall ensure the correct selection of the make meeting the specifications and application duties. Before placing order for procurement, the sample of make shall be got verified for its suitability to the specification and application duty. However, in case Employer's representative / engineer, whose decision will be final and binding on both parties, considers that the make / model proposed by the contractor does not meet the requirement, the contractor will be required to propose an alternative make acceptable to the Employer's Representative.

C. The Contractor shall quote the rates for material and equipment's as per the list of listed makes. In the event of contractor wanting to use alternate makes other than those stipulated for any reason, the contractor can send a proposal after ensuring that what he proposes at least meets both the quality, and safety standard of the stipulated makes and specifications as stated in the Particular Specifications. He shall also stand full guarantee to his alternate proposal. The alternate makes can be used only after an approval accorded by the Employer, whose decision will be final in the matter.

S.N.	Items	Name of Makes
1	GI conduit pipes ISI marked	BEC, AKG, Steelkraft and other equivalent ISI marked
2	GI Conduit accessories	Conforming to BIS/ISI of Above MAKE
3	Copper conductor FR PVC insulated wires ISI marked	KEI, Finolex, Havells, Bonton, Ploycab
4	Modular System switches, socket outlets, and wiring accessories with moulded cover plates	Crabtree, MK Electric, MDS, Schneider, SSK,ABB, Legrand
5	Miniature circuit breakers	L&T Hager, Legrand, MDS, Siemens, Schneider, ABB
6	Residual Current Earth Leakage circuit breakers	L&T Hager, Legrand, MDS, Siemens, ABB, Schneider
7	MCB Distribution Boards	L&T Hager, MDS, Siemens, ABB, Havells, GE, Tricolite, Schneider, Neptune, Adlec,

8	Moulded Case Circuit Breakers	L&T, Siemens, ABB, Schneider, MDS, Legrand
9	Switch fuse units with HRC fuses	L&T, GE, Siemens, Control & Switchgear Limited, ABB, Schneider, Crompton-Greaves
10	Protective relays	Alstom (AREVA), ABB, L&T, Siemens, Schneider
11	Copper/Aluminium, [Crimping type] Cable lugs for 1100 volt grade cables	Dowells, Jainson
12	XLPE Cables (FRLS)	Finolex, Asian/RPG, KEI, Havells, Bonton, Polycab
13	Compression glands for 1100 voltgrade cables	Peeco, Comet, Dowells
14	Terminal blocks & cage clamps	ELMEXX, PHOENIX, WAGO, Connectwel or equivalent
15	Capacitors	Crompton, Mehar(Schneider), L&T, Siemens, DUCATI, ABB
16	Cast resin current transformers	AE, Kappa, Control & switchgear, Precise, G&M (Gilbert & Maxwel)
17	Meters (digital)	MECO, DUCATI, Allen-Bradely, Motwane, AE, Enercon, HPL,Schneider, L&T , Secure
18	Selector switches	Kaycee, L&T(Salzer), BCH, Teknic, Schneider, ABB
19	Indicating lamps and pushbuttons	L&T, BCH, Vaishno, Siemens, TEKNIK, RAAS, Schneider
20	LED Light fittings	Philips(Signify), Bajaj, Surya, Wipro, Crompton
21	LED	Osram, Cree, Bridgelux
22	LED Drivers	Meanwell, Inventronics, Xitanium, Moso

Vendor Approval

It shall be obligatory for the Contractor to obtain Notice of 'No Objection' from the Engineer Representative/ Employer for the selection of the vendors for all items of work, even if the name of the vendor is specified in the Contractor's Technical Submission and the works to be done including purchase of materials and equipment is in accordance with the Standards specified in the Contract.

In case of vendor selected from the list provided in the contract,

(a) A list of vendors is provided in this contract.

(b) Contractor in general shall use the material of make as per vendor list unless specified in BOQ or makes meeting the tender specifications as approved by the Employer's representative.

(c) The contractor shall ensure the correct selection of the make meeting the specifications and its application. Before placing the order for procurement, the sample of make shall be verified for its suitability to the specification and application. In case Employer's representative/ engineer, (whose decision will be final and binding on both parties) considers that the make/ model proposed by the contractor does not meet the tender requirement, the contractor will be required to propose an alternative make acceptable to the Employer's Representative.

(d) The contractor will submit a list 'A' of vendors for all the items of the BOQ contract

(i) The list should include the items for which the contractor is proposing the product of the vendor.

(ii) The contractor will be advised 'No Objection' with following caveat:-

- The model etc. to be supplied will be the latest or superior one.
- The contractor will be required to submit the technical proposal for the scrutiny

(iii) For the items, contractor desires to propose new vendor, proposal to be submitted inaccordance as List 'B'.

(iv) The contractor will submit the undertaking that above lists i.e. List 'A' and List 'B'includes all the items required in the contract.

Vendor to be selected who are capable to provide good after sales services available in NCRTCduring DNP and thereafter.

Vendor Approval and Selection Procedure

A. In the event of contractor wanting to use alternate makes other than those stipulated, for anyreason, the contractor can send a proposal after ensuring that what he proposes at least meetsthe specifications both, the quality and safety standard of the stipulated makes and the financial benefit that will accrue to the employer .The alternate proposed product should be aproven one. He shall also stand full guarantee to his alternate proposal and if at any stage it isfound that the material is not suitable or meeting the tender requirement, the contractor shallreplace the material and provide the material from the listed vendors without any additional cost to NCRTC. The alternate makes can be used only after an approval accorded by the Employer, whose decision will be final in the matter.

B. The approval of any equipment or product to be used shall be done in two stages:-

(a) Stage-I

- Assessment of capability of proposed Vendor to supply a particular equipment or product, with quality and performance requirements, as required by Specifications aswell as other contract conditions. The proposed product should be a proven product in service for at least 3 years.
- Assessment of the financial and functional strength of the Vendor to supply the requisite quantity of equipment and product as per delivery schedule acceptable to contractor and engineer to deliver the project in time.

(b) Stage-II

Stage-II called as Technical Submission Approval Stage, selection of Equipment or product from the equipment / products manufactured / supplied by the approved vendor will be done. This stage includes thorough technical assessments about the conformance of the offered equipment / product to the Specifications and other requirements.

(c) To obtain Vendor Approval the Contractor must apply with the four sets of thefollowing documents to the Engineer

(i) Company Profile and Experience of the Vendor

(ii) Clause wise compliance of the relevant Clauses of Specifications.

(iii) Details of supplies / orders executed in last ten years for the type of equipment / product offered. Supplies / orders executed for Underground Metro Systemsshall be specifically mentioned

(iv) Details of the facilities available at the Works / Manufacturing Unit where theproposed equipment / product shall be manufactured.

(v) ISO 9000 Certification for the Works / Manufacturing Unit where the proposed equipment / product shall be manufactured (The Works / Manufacturing Unitwhere the proposed equipment / product shall be manufactured must have ISO 9000 Certification)

(vi) Proof regarding compliance to Manufacturer's Qualifications. The offered products must be proven in service.

(vii) Audited Financial Statements of the Vendor for the last three years.

(viii) Type test certificates/ Performance certificate from accredited laboratories for the proposed type of equipment / products to establish the technical capability of the vendor (In case, specific requirements are mentioned in the

relevant sections of Specifications with regard to type testing, same shall alsobe complied additionally).

(ix) The vendor shall not have been blacklisted by any Govt. Agency in India.

(x) Any other item as required by Employer / Employer's Representative.

(d) Contractor must certify the check list provided that vendor Proposal is complete and all the above documents are available in the Vendor Proposal. In addition, the Contractor must check / certify compliance to the Specifications before forwarding thesame.

(e) Incomplete Vendor Proposal will not be treated as a submission and will be returned.

(f) Engineer will give Approval to the Vendor Proposal (received complete with all the documents mentioned above) expeditiously.

(g) Technical submission shall be accompanied with the calculations / other technical documents to justify the selection of any particular model of equipment / product, detailed technical features / parameters of the selected product, type test certificatesfrom the accredited laboratories for the offered products, any other document required by the Engineer.

(h) Engineer will give Approval to the Technical Proposal (received complete with all the documents mentioned above) expeditiously.

C. It may be noted that Approval of Vendors as per Point (3) above shall only be done by Employer
/ Engineer after the award of the work. Vendor submissions shall not be evaluated during thetender evaluation. Conditional Tender offers received from Bidders with particular Vendors forsupply of equipment/ products will not be evaluated during evaluation and will be dealt with after award of the work.

D. It may further be noted that Employer / Engineer shall be under no obligation to accept equipment / products manufactured by the successful Bidder, unless it meets the entire criterion mentioned above.

Annexure-3

TESTING AND INSPECTION

1. General

A. As part of the preliminary design submission the Contractor shall submit to the "Engineer" for acceptance a schedule of tests giving full details of all tests to be carried out.

B. Tests at places of manufacture to be witnessed by the "Engineer" shall be grouped together so far as can be arranged so that as many tests as possible can be witnessed on each visit.

C. The Contractor shall prepare and forward to the "Engineer" an original and four copies of all Test Reports as soon as practicable after completion of each test whether witnessed by the "Engineer" or not. All test data shall be certified by the Contractor's Professional Engineer.

D. The Contractor shall perform all applicable test specified in these specifications as per the relevant standards. Any test required as per the applicable safety standards but not specified in this specification shall be performed without any extra cost to NCRTC.

2. General Requirements for Type Tests and Acceptance Tests

A. The contractor shall provide details of any type and acceptance tests, which have been carried out on equipment offered, or any additional tests he recommends.

B. In general, certificates of previous type tests may be accepted at the discretion of the "Engineer", provided that they are for identical equipment and conditions. Where appropriate, new and/or modified components to meet the requirements of this Specification shall be made available for type testing.

C. All applicable Type tests as per the relevant standards on equipment shall be carried out strictly as specified in the Specification and procedure of testing shall be submitted to "Engineer" for No Objection.

D. The "Engineer" shall have right to witness tests and inspections on individual materials, components, or sub-assemblies, and details of these shall be agreed between the Contractor and the "Engineer".

E. At the conclusion of all type tests, the Contractor shall compile all the test data together with any observations made during the tests, file them into a type test binder and submit it to the "Engineer" for acceptance and record.

3. General Requirements for Tests during Manufacturing

A. The Contractor shall carry out all applicable tests during manufacturing as specified and propose any additional tests to be carried out as per relevant safety standards. These tests shall be subject to the acceptance of the "Engineer".

B. Routine tests shall be integrated with the manufacturing programme. The "Engineer" will, at his discretion, witness the routine tests during the period of manufacturing,

or accept the records of the Contractor's in-house quality control scheme, where appropriate,as sufficient evidence for the execution of the routine tests.

C. Routine tests shall be carried out strictly as specified in the test specification.

D. On completion of the manufacture of items or sub-assemblies, and following completion of the manufacturer's own tests and inspection, the "Engineer" shall be invited to witness such tests as he deems appropriate

E. The "Engineer" will determine and advise the Contractor of those tests where certification by the manufacturer may be acceptable in lieu of witnessed tests.

F. Before equipment is dispatched, the "Engineer" will signify his acceptance by signing certificates releasing such equipment from the place of manufacture or test.

G. Methods of packing and shipping detail shall be submitted by the Contractor, the "Engineer" reserves the right to visit the manufacturers' or packers' premises to ensure that accepted methods are employed.

4. Test Specification

A. The Contractor shall submit for acceptance by the "Engineer", test specifications for type tests, routine tests, tests on site, final acceptance tests and commissioning. The specifications shalldetail the methods of conducting the tests, the tools and instruments used. Reference to theaccepted documents and drawings shall be included in these specifications. The records/results shall be tabulated in a prescribed format applicable to this Contract.

B. Nothing in this Specification shall prevent the "Engineer" from calling for extra tests.

C. These test specification shall include the design values of all quantities to be verified, with allowable tolerance or limits. Summary drawings or diagrams shall be included with the test specifications to show the dimensions and tolerances of all structural assemblies and sub- assemblies. In the case of welded fabrications, key diagrams giving all weld data shall be provided to enable systematic inspection to take place.

D. Verification of accuracy shall be required for all tools, apparatus, testing jigs, measuring instruments and 'go' or 'no go' gauges used for the purpose of routine tests.

E. All test instrument shall be calibrated not more than one year prior to their use. The Contractor shall submit calibration certificate or other documents for proof of Compliance.

5. Testing of Materials and Details

A. Where materials or components used in this Contract are not covered by separate test specifications, samples of such materials, or up to two per cent of such components shall, if desired by the "Engineer" be tested at the Contractor's expense at an approved laboratory.

B. The Contractor shall supply the material required for testing free of charge and shall supply and prepare the necessary test pieces, labour and appliances for making all tests, and for carrying out all gauging and weighing on his premises in accordance with the terms of this Specification. If the Contractor is unable to provide approved facilities at his own factory for making the prescribed tests, the Contractor shall bear the cost of carrying out the tests elsewhere, at a place subject to the "Engineer" acceptance.

6. Interface and Integrated Tests

A. The Contractor shall co-ordinate and carry out interfacing and integrated testing together withother System-wide Contractors/Operator to ensure that the all-integrated

systems function as desired. The system shall be taken over only after the completion of the Integral testing & commissioning done at all the section of the station.

7. Certificate of Taking Over

A. The final acceptance tests of each item of equipment shall be undertaken in the presence of the "Engineer", in accordance with the test specification. Any defects and/or deviations discovered without prior written approval during the tests shall be rectified at the Contractor's own expenses. These shall be entered into a defects list agreed between the Contractor and the "Engineer". The Certificate of Taking Over will not be issued until these tests have been completed and the defect list substantially reduced to such an extent that the "Engineer" considers that the equipment is safe for operation.

Annexure-4

QUALITY ASSURANCE AND SYSTEM ASSURANCE

1. General

A Quality Assurance programme shall be developed and implemented as a means of determining compliance with the Employer's Requirements. This programme shall comply with the requirements as set out in ISO 9000. The programme shall include but not be limited to the procedures necessary to ensure that all equipment, materials, systems and sub-systems are properly specified, designed, purchased, recorded, inspected, installed and tested at all appropriate stages. The procedure shall also ensure that handling, storage and delivery arrangements are satisfactory.

2. Quality Assurance Programme

The Contractor's quality assurance programme shall include as a minimum, the following functions:-

A. Inspection System: A system for in process inspection of work operations and manufacturing as well as installation processes, including observations, measurements and tests, to ensure conformance with the requirements of the Contract.

B. Calibration System: A system for periodic calibration and control of the accuracy of precision instrumentation and gauges.

C. Record System: Data and records essential to the operation of the quality programme shall be maintained by the Contractor and made available to the "Engineer" upon request. These records shall include work performance, inspection and testing observations and the number and type of deficiencies found. In addition, records shall be maintained for monitoring work performance, inspection and testing which indicate the acceptability of work or products and the remedial action taken in connection with deficiencies.

D. Supplier Control System: A system for ensuring that all supplies and services procured from suppliers (subcontractors and vendors) conform with the requirements of the Contract.

E. Manufacturing Control System: A system for providing necessary control over manufacturing operations to ensure that the final product conforms with all requirements of the Contract. This system shall include controls for the following areas:

i. Materials

Suppliers' materials and products shall be subject to inspection to demonstrate conformance with the technical requirements.

ii. Production Process and Fabrication

The Contractor's quality assurance programme shall ensure that all machinery, wiring, batching, shaping and basic production operations (of any type) together with all processing and fabricating are accomplished through documented work instructions. These instructions shall be the criteria for acceptable workmanship.

iii. Completed Item Inspection and Testing

The quality programme shall ensure that there is a system for final inspection and testing of completed products. Such testing shall provide a measure of the overall quality of the completed product and be performed so that it simulates, to a sufficient degree, product enduse and functioning.

iv. Statistical Quality Control and Analysis

Statistical methods may be utilized for planning, analysis, tests and quality control whenever such procedures are suitable for maintaining the required control of quality. Sampling plans shall be subject to the acceptance of the "Engineer" prior to use.

v. Indication of Inspection Status

The Contractor shall maintain a positive system for identifying the inspection status of products. Identification may be accomplished by means of stamps, tags, routing cards, move tickets or other control devices acceptable to the "Engineer".

Installation Control System: A system providing necessary control, monitoring, inspection of the progress, quality of work and protection of equipment, to ensure that the equipment is installed according to the requirements of the contract.

The system shall include but not be limited to the following, which shall be subject to the acceptance of the "Engineer" prior to use:

vi. Shop Drawings

All layout and shop drawings giving detailed layout of equipment, structural cut-outs, supports,openings, all dimensions, tolerances setting, etc.

vii. Assembly Procedures and Drawings

This shall show details of all installation and assembly procedures, including tolerances,tightening torque, alignment, precautions, etc.

viii. Inspection Checklist

Checklists giving all items to be checked and inspected with tolerances setting, etc.

The Contractor shall submit checklists to demonstrate compliance with all applicable standards.

3. Systems Assurance

The Bidder shall demonstrate a clear understanding of all the requirements of this Clause in his tender submission.

A. General

(i) The Contractor shall develop and implement the requirements for Systems Assurance. These requirements shall be applied also to subcontractors and suppliers and shall becarried out during the design, manufacture, installation, testing and commissioning phases of the Works.

(ii) The Contractor shall prepare and submit for review and acceptance by the "Engineer"a Systems Assurance Plan thirty days after Contract Award.

(iii) The System Assurance Plan shall define the Contractor's approach, procedures and schedules for conduct of Safety Engineering, Reliability Engineering and Maintainability Engineering. Human Factors Engineering is an integral part of Systems Assurance and shall be considered and reflected within the Systems Assurance Plan.

(iv) The Contractor shall pro-actively engineer the systems to meet the safety, availability, reliability and maintainability performance requirements listed below and demonstrate that the requirements have been met by the system installed.

(v) In the process the potential hazards to safety, availability, reliability and maintainability performance should be further minimized where design options permit.

(vi) The deliverables listed below are intended to provide the "Engineer" with a sound basis for acceptance of the safety, availability, reliability and maintainability performance; progress information; confidence that the design is proceeding with a low risk of failing to meet the performance requirements; information that will aid the planning of work schedules; and part of the foundation of the safety case for operationof the line.

Annexure-5

MAINTENANCE REQUIREMENTS

Maintenance

a. In addition to his obligations under the Contract along with 2 years of DLP, the Contractor shall provide maintenance services throughout the **3 years of Comprehensive Annual Maintenance (CAMC)** for all the Equipment. Maintenance work shall include attendance to all service calls, work described in approved Maintenance Schedule and man power detail, which shall be submitted by Contractor for review and acceptance by Engineer/Employer.

b. All defects shall be remedied at the earliest possible within 24 hrs. Service shall include all work necessary to always maintain the entire E&M system in good order.

c. During the Maintenance Period, the Contractor shall, at its own cost and expense, replace any part or equipment, which may be defective or worn out, by a substitute thereof (the "Spares") which may be necessary for the efficient operation and maintenance of the E&M Work System.The quality and rating of Spares shall be same as of original parts.

d. The Contractor shall mobilize competent personnel to rectify stoppages at any time during the day or night when being called on by the Employer or its representative. Repairs shall be carried out 24 hours per day, 7 days per week, on a basis until the faulty unit is put back in service.

e. The Contractor shall carry out periodic testing and examination of equipment safety devices as may be required. A master schedule of such planned tests shall be submitted to the Employer or/and its representative at least 1 months before completion of the work.

f. Reports: Contractor shall provide Monthly, quarterly, half-yearly and yearly reports on the condition of the equipment in an agreed format (format will be finalized during design Stage).

g. A report in duplicate shall be sent to the Employer and/or its representatives immediately following every call out, indicating the time of call out visit, cause,

remedial action taken, the time that the service was restored, item replaced if any and Cause of failure. The monthly summary of failure report along with the analysis given details of nature of fault, remedial action taken etc. in the approved format shall be provided.

h. Reports on routine visits are not required except where necessary to draw attention to defects,which could not be rectified during the routine visit. Records of each routine visit and call-outvisit, together with details of the work done or action taken, shall be entered on a logbook which shall be provided by the Contractor and retained in SCR room or Maintenance room or other location as decided by the "Engineer/Employer".

i. The Maintenance service shall include all Preventive/Scheduled & Corrective/Unscheduled Maintenance. In this context, the Contractor shall submit a PM Schedule and CM procedure for Approval, 1 months before the completion of the execution work.

j. NCRTC may appoint Third Party Agency for Operation and Maintenance of E&M System after completion of 3 years of CAMC, therefore Contractor shall not have any objection and submit the Undertaking that, "Bidder/Contractor shall not have objection to on handing-over the necessary Contractor's Operation & Maintenance manuals to NCRTC's Nominated Agency for operation and Maintenance of Equipment". Contractor shall arrange the joint inspection with NCRTC / NCRTC's Nominated Agency to check the healthiness of the complete system after completion of CAMC period and rectify the defects (if any) before final handing over of work.

k. Based on the Maintenance Requirement Analysis, the Contractor shall indicate in the Maintenance Plan, the final preventive maintenance programme, the proposed skill and manning level, spares level and special tools required. The proposal shall be fully traceable to the maintenance Requirement Analysis output.

Employer's Maintenance Strategy

Maintenance Strategy

a. The Contractor shall ensure that the system designed, installed and commissioned is supportable throughout the service life of the System to address, as a minimum, the following:

   i. Design errors in the System;
   ii. Operational changes;
   iii. Environment changes; and
   iv. Changes in infrastructure.

b. According to the maintenance strategy, all equipment and infrastructure supplied for the 'Project' must be designed for minimum or no maintenance. Maintenance activities required must be capable of being performed with little or no impact on the train service. In addition, the maintenance work systems shall ensure safety of personnel and equipment.

Responsibility of Contractor during maintenance period

a. During the maintenance period, the contractor shall carry out all type of breakdown, preventive and corrective maintenance. Breakdown maintenance would be done whenever breakdown occurs. The contractor should post his supervisor and

maintenance staff at a key place or as determined by the Employer in theDelhi-Meerut corridor) on the stations as determined by the Employer/ Engineer.

b. The acceptable response & attention time also needs to be mentioned for minor & major breakdowns.

c. Maintenance Management System (MMS) and Maintenance Arrangement

During non-operation time, sections of line will be closed for maintenance work. The minimum time for possession periods is 4 hours. Ideally, this time shall be the free time available for maintenance.

d. Competency of Personnel

During the maintenance period the Contractor shall depute sufficient trained and competent personnel for maintenance purpose. Such persons shall have their generic competence established and must demonstrate their specific competence and knowledge in the particular systems, environmentand procedures.

In the event of a failure, the Contractor shall undertake the management and investigation necessary to identify and rectify the cause.

e. Testing and Re-commissioning of System and Equipment

In the event of a failure requiring modifications to the System, the Contractor shall undertake any testing and re-commissioning required. Any such modification shall be submitted for review by the "Engineer/Employer".

f. Temporary Alterations to Restore Service

The Contractor shall undertake any temporary modifications necessary to maintain service. Any such modification shall be submitted for review and acceptance by the "Engineer/Employer".

g. Discrepancies between Installation and Design Records

Should the Contractor discover inconsistencies between the maintenance drawings and documentation and the installed equipment, the Contractor shall correct all such errors withintwo weeks.

h. Communications

The Contractor shall ensure that adequate communication facilities are provided to its staff during the Maintenance. Call Center (Single Point Reporting Center) shall be maintained by Contractor for NCRTC project during maintenance on which Employer's representative can report the failure and can keep communication for Service calls and status of Failures.

i. Location of Staff

The Contractor shall be responsible for locating staff such that the Contractor meets its obligations.

j. Storage of Equipment and Materials Comprehensive Annual Maintenance Period

The Contractor shall ensure that no equipment is stored along the trackside. The Employer will provide defined storage locations for the support of the different levels of Maintenance.

k. Maintenance Regimes

The Contractor shall produce a maintenance regime for the equipment that shall comprise two constituent parts, corrective and routine/preventative maintenance. Corrective maintenance shall be available 24 hours per day, able to respond to all foreseeable circumstances. The maintenance regime shall cover all parts and equipment of the system designed, installed andcommissioned by the Contractor. The Contractor shall take into account the requirements of the operations and maintenance when determining and proposing its maintenance regime. The regime and structure of corrective maintenance shall be robust in design.

l. Scope and Hours of Coverage

The Contractor shall provide a full 24 hour On-Call coverage and shall be such that initial response and rectification of failure are in accordance with the following:

- assistance for first line corrective maintenance (where adjustment within System is required) immediately, upon request of first line maintainer;

- 24 hour from notification for second line maintenance where spare parts replacement is involved; and

- within 3 days including transportation time for third line maintenance where replacement or repair of component from factory is involved. Any extension to this time shall be agreed with the "Engineer/Employer" and a replacement provided.

All elements of First Line preventative maintenance shall be carried out and completed duringnon-traffic hours without interrupting train services.

If the equipment is kept non – functional for more than a week then the DNP may be enhanced proportionately in the multiple of month.

m. Failure Investigations

The Contractor shall conduct failure investigations. Disputes between the Contractor and other Contractors will be resolved by the "Engineer/Employer". Contractor shall make available to the Employer all test and failure data as required.

a. Routine and Corrective Maintenance Procedures

Routine and corrective maintenance procedures shall be supplied for all equipment. The format shall be as follows:

Uniform format and layout irrespective of equipment supplier; Colour coding for each activity; Cross referenced to the Operation and Maintenance Manuals; and Document control information.

Spare Policy

1. Spares

A. Any consumable item if required by the Bidder will be deemed to have been included the overall cost of the Bid and shall be supplied as per the provisions of this contract without any extra financial implication to the Employer. In case any changes are required in the supply of consumables on account of changes during AMC period, the contractor shall have to supply the required consumables without any extra cost.

B. List of consumable spares and following information as minimum shall be provided.

- Names, addresses, telephone numbers and other particulars of manufacturers and their local representatives;
- Models and part numbers,
- Full description of spares including a note whether it is sealed unit or an assembly or sub-assembly which can be broken down into component parts;
- Expected consumption rates;
- Normal manufacturing and shipment lead times; and
- Shelf life.

It shall be the responsibility of the contractor to maintain sufficient stock of consumable spares till the end of CAMC. These spares will be utilized by the Contractor during the CAMC.

Organization Charts and Manning Schedule

The necessary Key staff (Project Manager, Site Engineer, Site Supervisor) with sufficient experience of similar nature of work shall be deployed at site during execution of work. The Contractor shall submit the detail CV for review and approval of NCRTC.

The performance of project personnel deployed will be evaluated periodically by Employer during the contract period. In case the performance of any of the project personnel is not satisfactory, the Contractor shall replace them with good personnel immediately as per directions of the Engineer.



NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMTED

REGIONAL RAPID TRANSIT SYSTEM

EMPLOYER's REQUIREMENT ON

SAFETY, HEALTH & ENVIRONMENT (SHE)

(As on 08th June 2020, Non-ADB Contracts)

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LTD.

7/6, AMDA Building, Sirifort Institutional Area,

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Part – 1: SHE Management

1.0 General

1.1 Scope

1.1.1 This document defines the principal requirements of the employer on Safety, Health and Environment associated with the contractor / sub-contractor and any other agency to be practiced at construction worksites and associated activities at all times.

1.1.2 The Contractor shall be solely responsible for ensuring Safety, Health and Environment Management while executing the project and shall take all necessary steps/measures to ensure the Safety & Health as well as compliance of the Environment Management System requirements at site. The clauses hereunder set out the Employer's requirement regarding the Safety, Health & Environment which contractor shall ensure until completion of the contract.

1.2 Abbreviations & Definitions

In this document, following key abbreviations & definitions are used:

1.2.1 Abbreviations

(i) The use of **"shall'** indicates a mandatory requirement.
(ii) The use of **"should"** indicates a guideline that is strongly recommended.
(iii) The use of **"may"** indicate a guideline that is to be considered.
(iv) **"SHE"** means Safety, Health and Environment.
(v) **"Employer"** means National Capital Region Transport Corporation Ltd. (NCRTC)
(vi) **"HIRA**" means Hazard Identification and Risk Assessment.
(vii) **"BOCWA"** means Building and other Constructions Workers (Regulation of Employment and Conditions of Services) Act, 1996
(viii) **"CPCB"** means Central Pollution Control Board
(ix) **"SPCA"** means State Pollution Control Board
(x) **"EPCA"** means Environment Pollution (Prevention & Control) Authority
(xi) **"ISO"** means International Organization for Standardization
(xii) **"GRAP"** means Graded Response Action Plan notified by the Ministry of Environment, Forest and Climate Change, Government of India

1.2.2 Definitions

(i) Workplace – A place under the control of the organization where a person needs to be or to go for work purposes.

(ii) Injury and ill health – an adverse effect on the physical, mental or cognitive condition of a person.

(iii) Hazard – Any source with a potential to cause harm or hazardous situations, or circumstances with the potential for exposure leading to injury and ill health.

(iv) Risk – An effect of uncertainty and uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequences, or likelihood.

(v) OH&S Risk – It's a combination of the likelihood of occurrence of a work-related hazardous events(s) or exposure(s) and the severity of injury and ill heath that can be caused by the event(s) or exposures(s).

(vi) Competence – Ability to apply knowledge and skills to achieve intended results

(vii) Incident – An occurrence arising out of, or in the course of, work that could or does result in injury and ill health.

(viii) Near-Miss – An incident where no injury and ill health occurs but has the potential to do so.

(ix) Corrective Action – An action to eliminate the cause(s) of nonconformity or an incident and to prevent recurrence.

(x) Continual Improvement – it's a recurring activity to enhance performance related to the both management system i.e OH&S as well as Environmental in order to achieve improvement in overall SHE performance.

(xi) Immediate Cause – An obvious reason for an adverse event.

(xii) Root Cause – An initiating event or failing, from which all other causes or fallings springs; or an initiating cause of either a condition, or a casual chain, that leads to an outcome or effect of interest.

(xiii) Disabling Injury (Lost Time Injury) – An injury causing disablement extending beyond the day of shift on which the accident occurred.

(xiv) Complex Lift – Lifting involving two or more lifting appliances to lift a single load involving various hazards

1.3 Application of this document

1.3.1 This document applies to all aspects of the Contractor's scope of work, including all aspects conducted by contractors, sub-contractors and all other agencies. There shall be no activity associated to the Contract, which is exempted from the purview of this document or any other statutory legislation/standards.

1.4 Purpose of this document

The objective of this document is to ensure that adequate/appropriate measures are taken for incident/occupational illness free safe work execution as well as to avoid harmful effects on the environment during construction. Through this document, various requirements on provisions of Safety, Health and Environment have been enlisted of which contractor shall ensure compliance at site in order provide safe & healthy workplace as well as ensuring public safety.

1.5 Responsibilities and liabilities

1.5.1 Contractor shall be solely responsible for safe execution of construction work while ensuring outmost safety & health wellbeing of the site personnel as well as general public and shall comply with all applicable requirements of this document as well as updated statutory legislation/standards pertaining to Safety, Health & Environment. Contractor shall not do anything which may deteriorate the environment and adversely affects the site personnel as well as general public and shall take every possible measure to raise their SHE standard.

1.5.2 The clauses hereunder set out the Employer's requirements regarding the Safety, Health & Environment which contractor shall ensure during their project execution till project completion.

However, the requirements mentioned in this document are not limited and contractors shall ensure the compliances of statutory legislation/standards along with additional requirements as required by employer from time to time.

2.0 SHE targets and goals

(i) Zero reportable incidents
(ii) Zero non-conformances in respect of compliance of statutory laws related to SHE as well as welfare facilities
(iii) 100% compliance in incident reporting and documented information
(iv) Executing construction activities with least inconvenience to the road users/public, traffic movement as well as environment.
(v) Minimize waste generated at sites and maximize reuse of materials
(vi) To achieve construction site as zero discharge site as far as is possible

3.0 Compliance

3.1 Memorandum of Understanding (MOU)

A Memorandum of Understanding attached as **Appendix No. I** shall be executed before the award of Contract by the Contractor with regard to various provisions on Safety, Health and Environment to be practiced during the construction work.

3.2 Indian statutory requirements

3.2.1 Contractor shall develop an effective and healthy safety, health and environment management system as well as welfare through ensuring the compliance of the requirements as mentioned in this document as well as updated/amended Indian Statutory regulations framed by government at central/state level and various standards/code at national/international level framed for the purpose of safe work practices at workplace on safety, health and environment as well as welfare. The key regulations and code of practice as applicable are enlisted below:

(i) Building and other Constructions Workers (Regulation of Employment and Condition of Service) Act, 1996 and Central Rules, 1998 and respective State Rules
(ii) Building and other Constructions Workers welfare cess Act, 1996 and welfare board rules
(iii) The Occupational Safety, Health and Working Conditions code, 2019
(iv) Electricity Act 2003 and Electricity Rules, 1956
(v) Motor Vehicle Act, 1988 and The Central Motor Vehicle Rules, 1989
(vi) Petroleum Act, 1934 and The Petroleum Rules, 2002
(vii) Gas Cylinder Rules, 2016
(viii) Static and Mobile Pressure Vessel Rules, 2016
(ix) Indian Explosive Act, 1884 and Explosive Rules, 2008 and Explosive Substance Act, 1908
(x) Indian Boiler Act, 1923
(xi) National Building Code, 2016
(xii) Indian red Congress Code, IRC: SP: 55 – Guidelines on Safety in Road Construction Zones.
(xiii) Environment Protection Act, 1986 and Central Rules, 1986
(xiv) Air (Prevention and Control of Pollution) Act, 1981 and Central Rules, 1981
(xv) Water (Prevention and Control of Pollution) Act, 1974 and Central Rules, 1974
(xvi) The Noise Pollution (Regulation and Control) Rules, 2000

(xvii) Manufacture, Storage and Import of Hazardous Chemical Rules, 1989
(xviii) Hazardous and other wastes (Management & Trans-boundary Movement) Rules, 2016
(xix) Delhi Preservation of Trees Act, 1994 and Rules 1996
(xx) Batteries (Management & Handling) Rules, 2001
(xxi) Solid Waste Management Rules, 2016
(xxii) Construction and Demolition Waste Management Rules, 2016
(xxiii) E-Waste (Management) Rules, 2016
(xxiv) Plastic Waste Management Rules, 2016
(xxv) The Code on Wages, 2017
(xxvi) Employee Compensation Act, 1923 and Rules, 1924
(xxvii) Minimum Wages Act, 1948 and Rules, 1950
(xxviii) Payment of Wages Act, 1936
(xxix) Public Liability Insurance Act, 1991 and Rules, 1991
(xxx) Contract Labour Act, 1970 and Rules 1971
(xxxi) Child Labour (Prohibitions & Regulations) Act, 1986 and rules 1950
(xxxii) Employee State Insurance Act, 1948

3.2.2 Contractor should prepare a legal register in respect of safety, health and environment as well as welfare wherein all applicable section/rules of various applicable Acts/Rules/code should be enlisted and submitted to Employer.

3.2.3 The contractor shall ensure that all his employees/workmen are covered under Employees Compensation Act/relevant act and shall pay compensation to his employees/workmen as and when the eventuality for the same arises.

3.2.4 Notwithstanding the above Act/Rules, there is nothing in those to exempt the contractor from the purview of any other Act or Rule in Republic of India for the Safety, Health and Welfare of personnel as well as preservation of environment. If the requirements stated in this document are less stringent than or in conflict with the country's applicable legislation, the latter shall apply.

3.2.5 Contractor shall apply and take various environment clearances from the concerned agencies as presented in Table below: These clearances are indicative, and contractor is required to take any other clearance as required for its construction activities.

Table 3.1: Key Environmental Clearance Required

Permission/ Clearance/Permit	RELEVENT ACTS/RULES	Concerned Agency
Consent to Establish and Consent to Operate batching plants and casting yards	The Water (Prevention and Control of Pollution) Act, 1974, amended 1988 and The Air (Prevention and Control of Pollution) Act 1981, amended 1987	Delhi Pollution Control Committee/ State Pollution Control Board
Consent to Establish and Operate Effluent Treatment Plants	The Water (Prevention and Control of Pollution) Act, 1974, amended 1988	Delhi Pollution Control Committee/ State Pollution Control Committee
Authorization for	Hazardous and other Wastes	Delhi Pollution Control

Permission/ Clearance/Permit	RELEVENT ACTS/RULES	Concerned Agency
generation, handling, storage and transportation hazardous waste	(Management & Transboundary Movement) Rules, 2016	Committee/ State Pollution Control Committee
Permission for extraction of ground water	Environment (Protection) Act, 1986/Central Ground Water Authority guidelines	Delhi Jal Board/NDMC/Central Ground Water Authority
Pollution Under Control Certificate	Central Motor and Vehicle Act 1988 Vehicular Exhaust Norms, CPCB 2007	Department of Transport, Delhi
C&D Waste Management Plan	Construction & Demolition Waste Management Rules, 2016	Local Authority (Municipal Corporation)

3.3 International Standards, Guidelines & ISO Certifications

3.3.1 Contractor should also adopt the International guidelines for ensuring effective setup of Safety, Health and Environment Management System and continually improve:

(i) ISO 45001: 2018 – Occupational Health and Safety Management Systems: Requirement with Guidance for use

(ii) ISO 14001:2015 – Environment Management System

3.3.2 Contractor shall aim to achieve and complete ISO certification for ISO 45001:2018 as well as 14001:2015 within eight (08) months from the date of LOA. The mobilization date will be finalized by the Employer. Contractor may also adopt Integrated Management System (IMS) certification which shall be specific to contract/project as awarded by Employer. However, contractor shall ensure that their existing Occupational Safety & Health as well as Environment Management System should be in line with the requirements of Employer and applicable International requirements i.e ISO 45001 and ISO 14001.

3.3.3 Contractor should complete their ISO certification process within stipulated time frame as mentioned. Contractor may also appoint consultant for obtaining ISO certification. If contractor fails to initiate or complete the certification process, the same would be carried out by Employer at the cost of the contractor. The certification (ISO/IMS) shall be maintained throughout the currency of the contract.

4.0 Occupational Safety, Health and Environment Policy and Plan

4.1 Occupational Safety, Health and Environment Policy

4.1.1 Contractor shall establish, implement and maintain an Occupational Health, Safety & Environment Policy in line with the Employer (NCRTC) and be submitted to Employer for review and approval.

4.1.2 The policy shall be displayed at conspicuous places at workplace in Hindi and a local language understood by majority of the construction workers. The policy shall at least contain the following:

(i) Commitment to provide safe and healthy working conditions for the prevention of work-related injury and ill health and is appropriate to the purpose, size and context of the organization and to the specific nature of its OH&S&E risks;
(ii) Provides a framework for setting the OH&S&E objectives;
(iii) Organizational arrangement to specifying the responsibility at different levels of hierarchy;
(iv) Includes a commitment to fulfill legal requirements and other requirements;
(v) Includes a commitment to eliminate hazards and reduce OH&S&E risks;

(vi) Includes a commitment for training of employee/workers engaged in the work;
(vii) Includes a commitment to continual improvement of the OH&H&E management system;
(viii) Includes a commitment to consultation and participation of workers, and where they exits, worker's representatives

4.1.3 Occupational Safety, Health and Environment policy shall be revised whenever any modification having implication on the safety and health of the workers is made or any new activity, substance, or technique are introduced which have implication on safety & health of workers as well as on environment. The updated policy should be submitted to Employer.

4.2 Occupational Safety, Health and Environment Plan

4.2.1 Contractor shall establish, implement and maintain a comprehensive occupational Safety, Health and Environment plan and the same shall be submitted within eight (08) weeks of time from date of award of contract or four (04) weeks of time from date of LOA to Employer for review and approval. The elements of the occupational Safety, Health and Environment Plan are enlisted in **Appendix – II & II(A)**.

4.2.2 Occupational Safety, Health and Environment plan shall be revised periodically whenever any modification having implication on the safety and health of the workers is made or any new activity, substance, or technique are introduced which have implication on safety & health of workers as well as on environment. The updated plan shall be submitted to Employer within 07 days from the date of its revision.

4.2.3 The Contractor shall adhere to the Safety, Health and Environment Plan and shall ensure, as far as practically possible, that all sub-contractors of all tiers require that contracting parties each have a copy of the Site Safety, Health and Environment Plans and comply with its provisions.

5.0 Designer's Role

5.1 Designer's Role in Health, Safety and Environment

5.1.1 Designer's primary role includes to minimize the risk to health and safety of those who are going to construct, maintain, clean, repair, dismantle or demolish the structures and anyone else like adjoining road users/general public, who might be affected by the work.

5.1.2 Duty to adequately address environmental risks in the drawing itself lies with the designer who has been engaged by the contractor to provide such design. Hence, overall responsibility of design of works in terms of Safety, Health and Environment risks completely rests with the contractor.

5.1.3 In case of situations where the designers have carried out the design work and concluded that there are risks, which was not reasonably practicable to avoid, detailed information shall be given about the health and safety risks, which remain. This information needs to be included with the design to alert others to the risks, which they cannot reasonably be expected to know. This is essential for the parties who have to use the design information.

5.1.4 If the designers' basic design assumptions affect Safety & Health risks are not obvious from the standard design document, the designer shall provide additional information. The information shall include a broad indication of the assumptions about the precautions for dealing with the risks. The information will need to be conveyed in a clear manner; it shall be included on drawings, in written specifications or outline method statements. The level of detail to be recorded will be determined by the nature of the hazards involved and the associated level of risk.

5.1.5 When considering health and safety in designer's work, they shall be expected to do what is reasonable at the time the design is prepared. It may be possible for hazards, which cannot be addressed at the feasibility stage to be looked at during detailed design. In deciding what is reasonably practicable, the risk to health and safety produced by a feature of the design must be weighed against the cost of excluding the feature.

5.2 Hierarchy of Risk Control

5.2.1 Designers shall need, so far as reasonably practicable, to avoid or reduce risks by applying a series of steps known as the hierarchy of risk control or principles of prevention and protection. The steps to be adopted shall include the following:

i) **Elimination**: Physically remove the hazard
ii) **Substitution**: Replace the hazard
iii) **Engineering Controls**: Isolate people from the hazard
iv) **Administrative Controls**: Change the way people work
v) **Personal Protective Equipment**: Protect the worker with personal protective equipment - Only after all the previous measures have been tried and found insufficient in controlling risks to a reasonably practicable level, must personal protective equipment (PPE) be used.

5.2.2 The Hazard Identification, Risk Assessment & its Control Measures shall be carried out for each activity involving risks to person and aspect Impact analysis shall be carried out for each activity involving Environment degradation. The sample formats for these activities are attached in the booklet of formats and checklist which will be provided to contractor at the time of mobilization.

5.3 Employer's approval

5.3.1 Every structure includes temporary formworks like scaffolding, trestle erection, false work, launching girder, earth retaining structures, parapet anchoring arrangement etc. shall have its design calculations included in the method statements in addition to health and safety risks. All designs shall be vetted by external third-party designer for their stability, rigidity, safe for use as well as load bearing capacity. Employers' designer or his approved proof check consultants as applicable as per the contract conditions shall approve all these designs. This shall also be a part of Method Statement and be submitted to Employer along with it or separately.

5.3.2 Any non-standard structures like trestles made up of re-bars or structures which are very old, corroded, repaired for many times etc. for which no design calculations can be made accurately from any national standards, shall not be allowed to be used at sites even for short duration.

5.3.3 Contractor shall develop a detailed Method Statement for each & every activity involving risk to personal injury as well as damaged to property and submit to employer for review and approval well in advance at least 14 days prior to perform activity so that MS can be review and approved timely. Guidelines for preparation of Method Statement/ model MS will be provided by the employer.

6.0 Contractor Safety, Health and Environment Organisation

6.1 Qualification and Experience

6.1.1 The contractor shall appoint the required SHE personnel as prescribed in **Appendix - III** and establish the SHE organisation based upon the contract value. The minimum educational qualification and work experience for SHE professional to be deployed are given in **Appendix - IV**. The sample format for submission of SHE organization chart to Employer is attached in booklet of formats & checklist.

6.1.2 To effectively implement the labour welfare provisions and to interact on such provisions with the Employer and the statutory authorities enforcing the labour welfare legislations, every contractor shall employ fulltime labour welfare officer duly qualified and experienced as per clause 6.1.1.

6.2 Conduct and Competency

6.2.1 The conduct and functioning of the contractor SHE personnel shall be monitored by the Employer. Any failure in discharging performance/default/or deficiency shall attract punitive action.

6.2.2 The Contractor shall ensure that all personnel are qualified and competent to perform the job assigned to them. If the Contractor is unable to demonstrate the competency of any person deployed at site whose activities can directly impact on the SHE performance, Employer shall remove that person from the site without any procedural formalities.

6.3 Deployment of SHE personnel

6.3.1 Contractor shall appoint Chief SHE Manager well before the start of activity for preparatory work like formulation, submission & approval of SHE Plan, Method Statements, SHE training facilities, SHE audit, ISO certification, Hospital Tie-up etc. The SHE organisation shall grow as the work fronts are made available and adequate SHE manpower shall be ensured as per the contract agreement and site availability.

6.3.2 The key positions like Chief SHE Manager, Traffic Manager, Occupational Health Officer, Labour Welfare Officer, Sr. Electrical (SHE) Manager shall be mobilized within four (04) weeks of time from LOA with prior approval from Employer. The other position shall be filled up as the site activities progress but there should be minimum SHE manpower as per **Appendix – III** be deployed at each site before taken up any work at respective site.

6.3.3 SHE personnel deployed at project shall not be demobilize without prior permission of the Employer. The key position should be remained on project till final project handover to Employer.

6.3.4 If the contractor fails to provide the minimum required manpower as illustrated in **Appendix - III** or fail to fill up vacancies within 14 days, the same shall be provided by the Employer at contractor's cost. Any administrative expenses involved providing the same as paper advertisement or manpower consultant charges, etc shall also be at the cost of contractor.

6.4 Employment status of SHE personnel

6.4.1 Contractor shall not engage SHE manpower from any outsourcing agencies in which case the effectiveness would be lost. All SHE manpower shall be on the payroll of the main contractor only and not on the payroll of any subcontractor or outsourcing manpower agencies etc. This condition does not apply to positions like traffic marshals/security guards who are engaged almost on a daily requirement basis.

6. 5 Approval from Employer

6.5.1 The detailed CV along with credentials of SHE personnel shall be submitted to Employer prior to his/her appointment and shall only be mobilized after getting approval from the Employer. Deployment of any SHE personnel without approval of Employer shall be deemed vacant position. In case any of the SHE personnel leaves the organization, the same shall be intimated to the employer within a week of time of his/her resignation and the vacant position shall be filled up before relieving of the existing SHE person and proper handover of all the documents should be ensured by contractor.

6.6 Reporting of SHE personnel

6.6.1 Chief SHE Manager shall report directly to the Chief Project Manager/Leader and SHE personnel under Chief SHE Manager should report to him in hierarchy of reporting manner. Employer shall always monitor adherence to this procedure. However, on day to day basis, SHE personnel's may also communicate the safety non-conformances to respective site execution engineer for early compliance.

6.7 Responsibility of SHE personnel

6.7.1 For all works carried out by the contractor and his sub-contractors, the responsibility of ensuring the required SHE manpower lies with the main contractor only. The minimum required manpower indicated by the Employer includes the sub-contractors' work also. It shall be the responsibility of the main contractor to provide required SHE manpower for all the works executed by all contractors' Necessary conditions shall be included in all sub-contract documents executed by the main contractor.

6.8 Prohibition of performance of other duties

6.8.1 SHE personnel shall not perform or forced to perform any work which is not connected to the duties of the SHE person as laid down in schedule – VIII of BOCW central rules, 1998.

6.9 Facilities to be provided to SHE personnel

6.9.1 Contractor shall provide such facilities, equipment and information that are necessary to enable SHE personnel to dispatch their duties effectively. The facilities include but not limiting to:

(i) Document controller in centralized SHE office
(ii) Computer/laptop, printer, scanner, lamination machines etc.
(iii) Earth resistance monitoring device (megger),
(iv) Handheld gas detectors/monitors
(v) Portable anemometer
(vi) Noise level monitor, lux meter
(vii) Provision of walkie talkie for communication especially in underground section, for critical activities like complex lifting, TBM lowering, Launcher erection, Push launching etc.

7.0 Contractor SHE Committee

7.1 Contractor shall establish SHE committee within four (04) week of time from LOA date and submitted to Employer for review.

7.2 SHE Committee meeting shall be conducted at least once in a month with the minimum members listed below:

Chairman	Chief Project Manager/Project Manager
Secretary	Chief SHE Manager
Members	i) SHE personnel ii) Labour Welfare Officer iii) Plant and Machinery In-charge iv) Electrical In-charge v) Traffic Manager vi) Barricade Manager vii) Store In-charge viii) Site respective Manager/Engineers like Construction Manager/Station Manager/Via-duct Manager/Tunnel Manager/Lifting Engineer etc.

	ix)	Sub – contractor's representative
	x)	Co-contractor's representative
	xi)	Workers' representative

The Secretary shall circulate the agenda of the meeting at least seven (07) working days in advance of the scheduled date of the meeting to all members as well as to the Employer.

7.3 The agenda of the SHE committee meeting should cover the following:

(i) Minutes of last meeting
(ii) Chairman's review/overview of site SHE performance / condition
(iii) Best practices conducted in the month
(iv) SHE performance data
(v) Previous month SHE statistics
(vi) Incident details
(vii) Employer observations
(viii) Site SHE inspection & issues includes all issues pertaining to safety, health & environment
(ix) Various Environment aspects including environment monitoring status/details
(x) Sub-contractor's site SHE issues
(xi) Non-compliances raised by statutory authorities/public etc.

7.4 Contractor shall ensure that, a minimum period of 21 days shall be maintained between any two SHE monthly committee meetings.

7.5 Short duration contracts should participate in main contractor's monthly SHE committee meeting.

7.6 Interface SHE committee meeting of main civil contractor, system contractor, track contractor or any other contractor shall also be conducted on monthly basis wherein key personnel of all contracts be available and discus the common issues.

7.7 Contractor shall also conduct their internal SHE committee meeting on weekly basis.

7.8 Minutes of the meeting

7.8.1 The Minutes of the meetings shall be prepared as per the format provided by the Employer and sent to all members as well as Employer within 2 working days. SHE Committee meeting minutes shall also be displayed in the notice board for wider publicity to all concerned.

7.9 Disciplinary Action

7.9.1 The chairman shall inform the members of any outstanding issues in the meeting and in case of repeated offence/ non-compliance by some members or other co/sub-contractors or non-attendance of the sub-contractor's representative invited for the meeting and propose suitable disciplinary action including provisions of monitory penalty as per the relevant contract clauses.

8.0 SHE Induction/Orientation training

8.1 The Contractor shall ensure that all personnel working at the site shall receive basic SHE Induction/orientation training on the first day of his/her joining/deployment at site. The training should cover the following:

(i) Nature of work being executed;
(ii) Nature of hazard and risk may encounter at site;
(iii) Familiar with the work practices being carried out or proposed to be performed;

(iv) General safety measures to be ensured while performing activity at site;
(v) Roles/activity of various sections at site;
(vi) Key practices to be adopted during any emergency;
(vii) Familiar with occupation health facilities etc.

8.2 The format for conducted of basic SHE induction will be provided by the Employer and proper record of each and every employee/worker engaged for project execution in the prescribed format shall be maintained by the contractor and summery of the same shall be submitted to Employer on monthly basis.

8.3 It shall be ensured that no employee/worker be deployed at site without basic SHE induction.

9.0 Identification Card

9.1 All personnel shall be issued a photo identity card duly signed by the authorized representative of the contractor to all employees/worker engaged at their respective project irrespective of their type of employment status before they are engaged for work as per the format given in the **Appendix - V.**

9.2 Apart from the basic details, following details shall be mentioned at the back side of the card:
(i) SHE Induction date
(ii) Medical Examination date
(iii) Basic 16 hrs completion date
(iv) Worker registration No. (under relevant act)
(v) PF/UAN No.
(vi) Emergency Contact No.
(vii) Any other detail as Employer seems required to be mentioned

9.3 These cards shall be of smart card type capable for capturing attendance and should have QR code containing key information of employee/worker. Contractor shall make necessary arrangement (centralized data capturing system) for upkeep of employee/worker data in digital form which can be access anywhere through ID card issued. Each employee/worker should have unique ID number and data shall not be deleted/erase in any circumstances.

9.4 Contractor shall make necessary arrangement so that Smart card with all details captured is issued within a week time and till date temporary ID card should be issued to employee/worker on the first day of employment after successful registration in data base.

10.0 SHE Training

10.1 Contractor shall setup all necessary arrangement like training room, projector, PPEs as well as other equipment for demonstration etc. The room should be hygienic, well ventilated, and spacious enough to accommodate at least 30 persons at a time.

10.2 All employee/worker at any level should undergo SHE training on key activities for which they are employed and training should be started from 2nd day of employment after the induction training and be continued for 3rd day also so that he/she can complete at least 16 hrs of SHE training on key areas. Post 16 hrs of SHE training, each employee/worker deployed at site should undergo at least 2 hrs of SHE training on various safety aspects in every week throughout the currency of project.

10.3 Contractor shall prepare a detailed training methodology and module for imparting SHE training and be submitted to Employer for review and approval. Training can only be started after approval from the Employer and so accordingly contractor should submit the proposal well in advance before mobilization of employees/worker at site.

10.4 Necessary arrangement shall be ensure by contractor that each and every employee/worker should undergo desired training within stipulated time frame and suitable guidance for the same to spare employee/worker to complete the training shall be pass-on by Project Manager or concerned department heads/In-charge.

10.5 Apart from the general SHE training involving various aspects of the SHE which is given to all employees/workers, some specific training shall also be given to concerned employees/workers:

(i) Defensive driving training for all construction machine drivers, pick & carry cranes, MEWP drivers etc.
(ii) Pick & Carry Hydra operator training to all operators through OEM or agencies authorized by OEM
(iii) Lifting Operation training to all crane operators
(iv) Scaffolding training for certified scaffolder responsible for safe erection/dismantling of temporary steel like trestle, scaffolding, form work etc.
(v) Pile rig operators
(vi) Tower cranes/gantry crane operators
(vii) Locomotive operator etc.

All the above specific training shall be provided to concerned employees/workers and competency should also be assessed by the Plant & Machine head as well as Chief SHE Manager before their deployment at site.

10.6 As personal behavior is the key aspects for effective safety management and its best performances, contractors shall ensure that all employees/workers are undergone for behavior based safety training and are fully adhered to ensure safety at site by their nature/attitude.

10.7 Contractor should develop a system for training need assessment to identify the key areas where training is required by the individual and accordingly priority of training be decided.

10.8 Refresher training to all employees/worker should also be conducted at regular intervals.

10.9 Both off-site as well as on-site SHE training shall be conducted and must be explained through vedio's/pictorial especially for workers

10.10 In case where it is not feasible to bring workers at a centralized training center, local training centre shall be operated at respective site offices or a mobile training van equipped with all required facilities for effective & successful training may also be mobilized at project through which off-site as well as on-site SHE training can be completed without wastage of time and in effective manner.

10.11 Minimum 20% Competent and certified staff for skilled and semi-skilled trades (Electrician, Welders, Mason, Carpenters, Steel Handlers, Scaffolders, Crane Operators, Construction Vehicle and Plant Operators, tunneling workers etc) shall be mobilise by the contractor at all times during the currency of contract.

10.12 In case of failure on the part of the contractor to provide SHE training to all employees/worker within stipulated time frame, the same shall be provided by the Employer through agencies if required by formulating a common scheme to all contractors at the cost of the contractor.

10.13 Contractor can hire agency or appoint qualified and competent SHE trainer for imparting general SHE training to all employees/workers However, he should only be designated as SHE trainer and does not have any role on site activities. The SHE trainer whether employed by contractor or deployed through agency shall have required qualification and experience as mentioned in **Appendix – VII.** Credentials of the same shall be submitted to employer for approval.

10.14 For ease of the contractor, agencies would be finalized by the employer and contractor is free to avail services from them.

10.15 Topic wise understanding assessment of employee/worker be conducted and recorded. When employee/worker completed their SHE training as per module be issued a certificate of successful completion of training and properly numbered pocket size card be issued to each individual containing elements of SHE on which training is provided and the same is recoded in their data base.

10.16 Training records of all employees/worker shall be properly maintained in digital form and arrangement for the same shall be done by the contractor. The consolidated or detailed information of the SHE training shall be submitted to Employer on monthly basis or as demanded by the Employer in the prescribed format.

10.17 Contractor shall also issue a personnel pocket SHE handbook in a language known to the workers, which provide information on SHE measures to be adopted during work activities and emergency procedures that all personnel working on contract are required to know and need to follow. Contractor shall ensure that this is distributed, and its content introduced to all personnel working at the site.

10.18 Apart from the SHE training to employee/workers, contractor shall also organized SHE awareness programmes for general public on regular basis i.e at least one SHE awareness programme a month at different localities/areas of their work stretch. The report of the same should be submitted to Employer.

11.0 Site Inspections

11.1 Contractor shall ensure that site has been regularly inspected by their staff at all levels in regards to SHE and such SHE inspection would vary from daily to monthly SHE inspection. All departmental heads should take lead role in this regards and act accordingly to ensure the compliance of this documents as well as statutory requirements/standards.

11.2 Various SHE inspections which shall be conducted contractor at site should include:

(i) Daily SHE Inspection
(ii) Weekly SHE Inspection
(iii) Fort-nightly SHE Inspection
(iv) Night Inspections
(v) Monthly SHE Inspection
(vi) Quarterly SHE Inspection
(vii) Half yearly SHE inspection etc.

11.3 Project Manager shall ensure that concerned person should be available in their respective area SHE inspection or inspection conducted by SHE person.

11.4 The following planned/specific SHE inspection shall by conducted by the following as per schedule mentioned below:

(i) Project Manager along with other departmental heads should also conduct at least four (04) SHE inspections in a month.
(ii) Plant & Machine In-charge – Plant & Machines at least on monthly basis
(iii) Electrical In-charge – Electrical system at least on monthly basis.
(iv) Traffic Manager – Traffic Management System on monthly basis.
(v) Chief SHE Manager – should inspect at least one site on daily basis.
(vi) Certified Scaffolder – temporary steel erection during its erection, use as well as dismantling
(vii) Lifting Engineer/supervisor – before performing any lifting operation and incase of heavy/complex lifting by lifting engineer etc.

11.4.1 Above specific/planned inspections are not limited and can be carried out by other persons based on the site requirements.

11.4.2 Inspection report shall be prepared by the contractor in the format provided by Employer. It should be jointly be signed by Project Manager, Inspection leader, and Chief SHE Manager and submitted to Employer within two (02) days of inspection and compliance status report be submitted within six (06) days of inspection.

11.5 Contractor shall prepare SHE inspection checklists for all activities/equipment involving any type of hazard based on national standards, statutory as well as Employer requirement.

11.6 Non-Conformity Report (NCR)

11.6.1 Contractor shall ensure that any observation raised should be complied on the same day but if left unattended for more than 2-3 days, its NCR shall be raised by Chief SHE Manager in the prescribed format and put-up to Project Manager for its immediate compliance with a copy to Employer.

11.6.2 NCR once raised shall be closed within 24 hrs of time from NCR generation time and if contractor still fails to comply then strict action against concerned person will be taken.

11.6.3 Chief SHE Manager should close the NCR after getting satisfactory compliance report from the concerned department head and NCR closure report shall be submitted to employer.

11.7 Contractor may make mobile as well as desktop-based application for raising SHE observation. Once the observation raise, concerned person should upload the compliance photo for its closure but if left unattended, the observation should automatically be goes to higher level i.e Project Manager and if still left unattended will goes to Employer and despite Employer instruction, if still left unattended, contractor shall be liable for strict action to be taken by Employer.

11.7.1 The application should be simple and effective and have system to export detailed observation data in printable form.

12.0 SHE Audits

12.1 SHE External Audit

12.1.1 Contractor shall initiate the process of external SHE audits within Eight (08) weeks from the date of award of contract and proposal of the same involving auditor CV/credentials, methodology etc. should be submitted to Employer for review/approval of auditors of the agency. All these exercises shall be completed with the stipulated time frame as mentioned above.

12.1.2 First audit shall be conducted within three (03) months from the date of LOA and there after audit shall be conducted on quarterly basis throughout the currency of project. If there is any change in auditor, credential of another auditor shall again be submitted to Employer well in advance for approval. Any failure in conduct of audit within schedule time is not acceptable and contractor is liable for penalty.

12.1.3 The required qualification and experience of auditor is mentioned in **Appendix – VII** and contractor should ensure that auditor fulfills the Employer requirement before sending proposal for approval.

12.1.4 Audit shall be conducted as per the guidelines of Employer requirement, national statutory requirement, standards as well as international guidelines i.e ISO 45001:2018, ISO 14001:2015, and IMS.

12.1.5 Contractor shall ensure that auditor should make report in proper manner and precise while maintaining the standard of the report and all SHE management system aspects are incorporated.

12.1.6 SHE external audit report shall be sent directly to the Employer within 15 days from the date of conduct of audit.

12.1.7 Contractor should submit the compliances status of the observation raised during the audit to Employer within 20 days from the date of conduct of audit.

12.2 SHE Internal Electrical Audit

12.2.1 SHE internal audit shall be conducted by Electrical In-charge in association with Chief SHE Manager and respective execution site In-charge on monthly basis in the format as provided by the Employer.

12.2.2 Contractor shall submit the report of the audit within 5 days of and compliance report within 10 days of conduct of audit. Electrical In-charge should ensure that documented information is maintained.

12.3 SHE Internal Audit

12.3.1 SHE internal audit shall be conducted by Chief SHE Manager in association with all departmental/section heads on monthly basis in the format as provided by the Employer.

12.3.2 Audit shall be conducted as per the guidelines of Employer requirement, national statutory requirement, standards as well as international guidelines i.e ISO 45001:2018, ISO 14001:2015, and IMS.

12.3.3 While preparing report, Chief SHE Manager shall ensure that report is precise and should cover all SHE management system aspects are incorporated.

12.3.4 SHE Internal audit report shall be submitted to Project Manager within 10 days with a copy to Employer and compliance report within 15 days from the date of conduct of audit.

12.4 Time frame to comply various categories of observations rises during the various audits whether external/or internal:

(i) High Risk Observation – immediately or on same day
(ii) Medium Risk – within two days
(iii) Low Risk – within four days

The above time frame is from date/time of observation raised during audit and is the maximum time frame allowed for compliance of the observation. If contractor fails to comply the same, shall be liable for strict action. Before conducting any audits, contractor shall give prior intimation to employer.

12.5 Apart from the above audits, Employer may also conduct its own independent audit.

13.0 SHE Awareness/Communication

13.1 Contractor shall take necessary action/ make arrangement so that SHE awareness level can be spread in wider manner. SHE posters/sign boards, informatory information, SHE booklets, SHE leaflets, banners, SHE awareness campaign at site, Health Check-up camps etc. shall be displayed/orgranised at site as well as office area and other locations as appropriate.

13.2 SHE posters or any other information shall be mentioned/ or displayed at the inner side of the barricade boards. Such portion of the board should be in white background or in case of pictorial information which deem fit for the intended purpose based on the information/theme.

13.3 Sign/information boards shall be retro-reflective and made of sturdy material. All sign/information board shall be anchored with ground/or structure/or fixed on barricade boards.

13.4 SHE awareness information for general public may be displayed on outer face/top portion of the barricade board/ or any other suitable locations.

13.5 All SHE posters, sign boards, information boards etc. shall be kept in clean and clear visible condition at all time of work.

13.6 For better visibility of SHE poster/information boards during dark hours, adequate illumination arrangement should be done.

13.7 All such posters, information boards, sign boards shall be properly numbered and recorded.

14.0 SHE Submittals to the Employer

14.1 Contractor shall submit SHE documents to and in form as demanded by the Employer. All information shall be provided in digital/electronic form until unless asked by Employer for submission in hard copy in time frame as decided by Employer.

14.2 Employer may also provide a common application-based platform for quick and efficient data submission. Data/information should be updated on daily basis in the application.

14.3 Documents/data submission in digital/electronic form includes:

(i) Daily Manpower Reporting
(ii) SHE Induction details
(iii) SHE training details
(iv) Medical Examination details
(v) Accident Statistic
(vi) Monthly SHE Report – includes section wise number of information
(vii) SHE Inspection & Compliance report
(viii) Non-Compliance Report
(ix) Audit Reports
(x) SHE Committee Meeting details including Minutes of Meeting
(xi) Incidents details
(xii) Air, Noise and water monitoring details
(xiii) Waste Management record
(xiv) Any other element as required by Employer
(xv) Any other elements as contractor deem fit to submit to reflects their SHE Management system

The form/formats for providing information can be obtained from Employer.

15.0 Incident Reporting

15.1 Reporting to employer

15.1.1 Contractor shall report all incidents irrespective of the nature of injury or property damage immediately on its occurrence by suitable means to Employer. The reporting shall be done by Project Manager or Chief SHE Manager to concerned officers of Employer i.e Chief Project Manager, Project Manager, Safety In-Charge as well as site Safety in-charge.

15.1.2 Preliminary report of incident shall be sent to Employer within 24 hrs of occurrence of incident.

15.1.3 Final incident investigation report in all incident cases involving fatality, major injury, dangerous occurrence, road traffic accident involving site vehicle or any other as demanded by Employer within five (05) days of occurrence of incident. It is the maximum time frame allowed to submit final report or may also be reduced based on the incident/urgency of report and failure which, contractor shall be liable for strict action as well as penalty.

15.1.4 In case of fatality/injury, the incident shall also be report to Employer labour welfare In-charge.

15.1.5 The preliminary as well as final incident report shall only be submitted in format as provided by the Employer.

15.2 Reporting to Government Organisations

15.2.1 Information of incident involving:

(i) causes loss of life; or

(ii) disables any worker from working for a period of forty-eight (48) hours or more immediately following the incident, shall be sent within four (04) hours in case of fatal incident and seventy-two (72) hours, in case of other incident involving worker to:

(a) the Regional Labour Commissioner (Central), having jurisdiction in the area in which the establishment in which such incident or dangerous occurrence took place is located;
(b) Board with which the worker involved in accident was registered as a beneficiary;
(c) Director General; and
(d) The next of kin or other relative of building worker involved in accident.

15.2.2 Information of incident involving:

(i) causes loss of life; or

(ii) disables such worker from work for more than ten (10) days following the incident, shall also be sent to:

(a) nearest police station
(b) District Magistrate.

15.2.3 Following classes of dangerous occurrences should be reported to the Inspector having jurisdiction, whether any death or disablement is caused to a worker:

(i) collapse or failure of lifting appliances or hoist or conveyors or other similar equipment for handling building or construction material or breakage or failure of rope, chain or loose gears; overturning of cranes used in building or other construction work; falling of objects from height;
(ii) collapse or subsidence of soil, any wall, floor, gallery, roof or any other part of any structure, platform, staging, scaffolding or any means of access including formwork;
(iii) contract work, excavation, collapse of transmission;
(iv) explosion of receiver or vessel used for storage, at a pressure greater than atmospheric pressure, of any gas or gases or any liquid or solid used as building material;
(v) fire and explosion causing damage to any place on construction site where building material;
(vi) spillage or leakage of hazardous substances and damage to their container;
(vii) collapse, capsizing, toppling or collision of transport equipment;
(viii) leakage or release of harmful toxic gases at the construction site.

15.2.4 In case of failure of a lifting appliance, loose gear, hoist or construction work machinery and transport equipment at a construction site, such appliances, gear, hoist, machinery or equipment and the site of such occurrence shall, as far as practicable, be kept undisturbed until inspected by the inspector having jurisdiction.

16.0 Incident Investigation

16.1.1 Contractor shall ensure that every incident involving death, major injury or dangerous occurrence is investigated immediately and all other incident shall also be investigated as soon as possible to ascertain the failure in the system leading to incident.

16.1.2 While investigation, all possible immediate cause and underlying root cause of incident should be identified and noted.

16.1.3 Eyewitness/key persons of the incident should be assured and politely interact with them in order to identify the actual scenario of the incident and their statement shall be recorded.

16.1.4 Photographs of the incident location should be taken by any site personnel immediately and if in any circumstances it is not possible, sketch shall be prepared and recorded along with post-accident photographs.

16.1.5 Employer may also conduct their independent investigation and contractor shall extend necessary co-operation for the same. Contractor shall take every effort to preserve the incident scene till the Employer complete his investigation and all eyewitness/key person shall be available as and when required. Any willful suppression of information by any person shall result into his removal from site immediately and penalized.

16.1.6 After each fatal accident and grievous injury, contractor's Project Manager/Leader shall give a presentation to Employer management within 72 hours highlighting their findings & proposed remedial measures. The presentation may be sought also after a serious near miss/dangerous occurrence as deemed fit by Employer.

17.0 Emergency Preparedness & Response Plan

17.1 Contractor shall prepare an Emergency Preparedness & Response plan specific to work site and emergency scenarios which may occurred at site. Plan shall detail the procedure to be adopted during various types of emergencies, resources available, emergency contact details, arrangement for injured treatment, procedure for rehabilitation, dealing with nearby community which may be affected, restoration of scene etc.

17.2 Plan should be complete in all aspect, clear, simple and should have all necessary information for smooth emergency handling.

17.3 Contractors shall have tie-up with the super-speciality or multi-speciality hospitals and fire stations located in the neighbourhood.

17.4 Contractor shall have one Ambulance on their role till completion of the project. Contractor shall increase the required number of ambulance as deemed fit by the Employer based on the site location and connectivity.

17.5 Contractor shall conduct an onsite emergency mock drill once in every month at all sites.

17.6 Contractor should keep the Local Law & Order Authorities informed and seek urgent help, as the case may be, so as to mitigate the consequences of an emergency.

17.7 Some of the emergencies which may arise:

i) Fire and explosion
ii) Collapse of lifting appliances leading to disruption of normal scenario of area
iii) Collapse of building, or structure etc.
iv) Gas leakage or spillage of dangerous goods or chemicals
v) Bomb threatening, Criminal or Terrorist attack
(i) Drowning of workers
(ii) Floods, Earthquake, storms and other natural calamities.
(iii) Any other emergency which may be identified at later stage be added to the Emergency Preparedness & Response plan and revised accordingly

18.0 Agencies for SHE Services

18.1 For the ease of the contractor, Employers have shortlisted the agencies/partnership firm/organization for the purpose of SHE services includes Training, External Audit, ISO certification or any other specific like testing of lifting appliances. Contractor can avail services from any of the agencies listed in **Appendix - VI**. However, contractor shall submit the proposal along with CVs & credential of Trainer, Auditors well in advance within the stipulated time frame to Employer for approval.

18.2 Contractor may also propose any other agency/partnership firm/organization for availing SHE services. However, complete profile of the agencies/firm/organization along with CVs & credentials of trainer, auditors or any other person like competent person shall be submitted to Employer for review & approval.

18.3 The required educational qualification and experience of SHE trainer, SHE Auditor or any other person like competent person is mentioned in **Appendix – VII.**

18.4 Contractor shall release the payment to hire SHE agencies within one (01) month of the submission of the invoice failing which the same will be release by the Employer and recovered from the contractor current bill payment.

19.0 Role of Contractor's

19.1 Main civil contractor engaged for construction of station/viaduct or any other major work is overall responsible for ensuring SHE practices of at their respective project/site as well as sub-contractor engaged by him. Main contractor should also bring in the notice of Employer, if any other civil/architectural finishing/system/track/Plumbing or any other contractor directly deployed through Employer violating the SHE norms.

19.2 The facilities/arrangement like provision required general lighting, premises security arrangement, provision of welfare amenities like drinking water, toilets/urinal, rest room; safe access/walkways etc. shall be ensured & maintained by main civil contractor during civil work execution at their respective site. Hence, these arrangements shall be remained at site till the complete handover of the project to Employer so that other contractors may utilize them. However, other contractors like small civil/finishing/finishing/system/track/plumbing or any other contractor directly deployed through Employer shall also ensure the following at their work area/locations:

(i) Provision of task lighting
(ii) Security arrangement for their own asset
(iii) Welfare amenities
(iv) Fire Protection & Prevention arrangements
(v) Good Housekeeping & hygienic area
(vi) Any other arrangement as deem fit to the Employer be provided at site by such contractors

19.3 The overall security arrangement of the site premises shall lie with the main civil contractor and all other contractors shall follow the same or as directed by Employer based on the site condition. Main contractor shall keep register/ or suitable arrangement for monitoring the personal entry-exit inside/outside the site premises.

20.0 Database Management System (DBMS)

20.1 Employer may introduce Database Management System application/programme as efficient mechanism for data storage, retrieval and manipulation for managing SHE system in effective manner. The system may be web based or desktop based application/programme.

20.2 The primary goal is to provide an environment for:

(i) Storing information into;
(ii) Retrieving Information and,
(iii) Manipulating Information in a database

20.3 Through this system, following data will be maintained in digital form which can be retrieving by Employer or contractor in any form and any type of information stored in the database:

(i) Personal details of all Employee/Worker include family information, ID details, Bank Account details, Photograph capturing, Bio-metric information etc.
(ii) Employee/Worker past training, work experience etc.
(iii) Worker registration details under relevant act including PF No./UAN No., ESI No. etc.
(iv) Present Employer details in case employed by sub-contractor
(v) SHE Induction record
(vi) Medical Examination record
(vii) Compensation details
(viii) QR Code Generator
(ix) Any other information as deem fit by the Employer or contractor shall also be added in the application/programme.

20.4 Once such system introduce, Contractor shall adopt the same and perform all SHE activities through this system and shall also arrange equipment/resource required for effective use of this system. Mobile based app may also be introduced at any stage and should be used by contractor.

21.0 Site surveillance/Monitoring

21.0 Contractor shall install wireless CCTV system or other advanced technology for surveillance monitoring of site activities. The installation of CCTV shall be carried out in such a way that complete entire construction site can be monitored.

21.1 Contractor shall install CCTV cameras or may use any other advance technology at the following identified locations. However, any other location may also be added at later stage based on the work:

(i) At entry/exit gate as well as inside the casting yard, batching plant. Inside the casting/batching plant areas includes – segment casting area, reinforcement work area/fabrication area, on gantry to monitor lifting operation, inside the gantry operator cabin to monitor the operator control operation;
(ii) At station areas – ground level, concourse level platform level especially at entry/exit routes and at platform level with full view of the platform/track activities.
(iii) For viaduct, effective system should be used or as recommended by employer.
(iv) At launching/retrieval shafts – on gantry to monitor lifting operation, inside the gantry operator cabin to monitor the operator controls; at tunnel face with outside & inside view, at segment lifter area in TBM, at TBM to monitor loco movement.
(v) Tunnel
(vi) On lifting appliance cabin for lifting operation view as well as inside the operator cabin for monitoring operator control operation

(vii) Training center etc.

21.2 The CCTV system should be connected through internet/Wi-fi for remote access as well as in Employer centralized control server room. Contractor should maintain CCTV system network throughout the currency of project and should continuously work.

21.3 Contractor shall not share CCTV footage to any outsider person/firms/agency/NGO etc. without prior consent of the Employer.

21.4 The camera shall have following minimum key specifications:

(i) Night vision facility for clear recording in dark hours with color images even in ultra-low light conditions up to 0.08 lux
(ii) Full High Definition (1080p) clarity with at least
(iii) 2.0 MP PTZ camera sensor
(iv) IR distance up to 150m Distance
(v) Digital zoom level – 16x and optical zoom level – 25x
(vi) Support H.265 vedio compression

21.5 System should store the recording for at least 15 days and later it can be stored in separate storage media.

PART – II: SAFETY

22.0 Housekeeping

22.1 In general housekeeping is the responsibility of all site personnel, and line management commitment shall be demonstrated by the continued efforts of supervising staff towards this activity. Whereas respective site engineer shall be overall responsibility for maintaining good housekeeping at their respective sites.

22.2 Housekeeping shall be carried out on daily basis and respective work team should carry out at the end of the shift. Hence, enough time shall be earmarked in each shift for housekeeping only.

22.3 Contractor shall provide segregated closed type containers for waste/debris collection and its disposal on regular basis.

22.4 Measures shall be adopted to prevent seepage of site muck/sand/soil/water etc outside the site premises or vice –a-versa.

22.5 All passageways/access/site utility like fire points, electrical panels etc shall be kept obstruction free.

22.6 Materials have potential for causing any type of injury should not be lying scattered inside the site premises and shall be properly stacked along the barricade or any other location so that it couldn't create any hazard to by-passers

22.7 Surplus earth/muck/debris shall be removed/disposed off from the working areas to officially designated dumpsites. Trucks carrying sand/earth and any pulverized materials etc. shall be covered while moving on road and should not be overload. The tyres of the vehicles leaving the site shall be cleaned with water or other suitable material, wherever the possibility of spillage of muck on carriageways exists.

22.8 During piling activity, the recovered muck shall be directly collected inside the container or order to avoid its spillage all over the site as well as in public area.

22.9 Debris or other material shall not be thrown inside or outside the site premises from any height.

23.0 Working at Height

23.1 Contractor shall be ensured that any type of height work is only carried out by trained workmen under competent & trained supervision of civil execution engineer/supervisor or nominated by him. While nominating, it shall be ensured that nominated person is also competent & trained for the task assigned to him.

23.2 Workers engaged at Height work shall be issued a **'Height Pass'** after assuring his competency, experience, physical & mental fitness etc. and be signed by Chief SHE Manager as well as Occupational Health Officer.

23.3 Hierarchy of Risk Control shall be implemented while planning for any type of height wok and accordingly control measures are ensured/ implemented before allowing any person at height.

23.4 Work equipment shall be selected based on the type of work activity and condition where it has to be performed and accordingly equipment be selected like provision of Mobile Elevated Work Platform where it is not possible to provide safe access in form of stair/ladder; type of collective as well as personal fall protection arrangement, PPEs etc.

23.5 Collective Fall Protection System:

Collective fall protection system protects large areas and provides fall arrest for more than one individual at a time and includes provision of edge protection, toe-boards, safety nets, catch platform, air bags etc.

23.5.1 Edge protection in form of guard rails shall have enough strength and sturdy enough to sustain the impact fall load without any deformity. Edge protection should have both middle rail as well as top as per national standards and be properly secured. Intermediate guard rail shall not exceed 470 mm and top rails shall not exceeds 1100 mm from surface where erected.

23.5.2 Edge protection shall be properly painted as per national standards reflecting the type of hazard/hazardous condition.

23.5.3 Toe board of minimum 150 mm shall be provided with all edge protection and should be rigid enough to avoid any material fall/roll out. It shall also be painted as per national standard.

23.5.4 Material used for handrail shall be of sound & sturdy and should not deform by its own or impact load may impose on it.

23.5.5 Any structure or part of a structure which supports edge protection system/ or erected over that shall be of sufficient strength and suitable for the intended purpose.

23.5.6 Height work/place having any possibility of material/person fall shall be properly covered with double layer safety net/catch platforms of sufficient strength and adequately tied-up with structure and be arrange in such a way that it fulfils the intended requirement especially to avoid any fall over the road/public areas. If required, debris net shall also be used based on the site condition/location.

23.5.7 Catch platform shall not be used as working platform or storage of material. It should be at least two metres wide and is inclined so that the position of outer edge of such platform is 1500 mm higher than the inner edge and the open end of catch platform is properly fenced to the height not less than 1 metre.

23.5.8 Collective fall protection system shall be inspected before allowing any work force as well as during the activity.

23.6 Personal Fall Protection System:

Personal fall protection system is an assembly of components to arrest the fall of an individual user/wearer against a fall from a height at work and includes Safety Harness along with lanyards, lifeline and other associated component.

23.6.1 Only full body safety harness shall be used and preferably of double lanyard type based on the site condition/type of work etc. and should confirm the national standards.

23.6.2 Lanyard used for safety harness should be kept as short as possible or retractable type lanyard is used. Lanyard should be anchored at the topmost portion/section/area of workplace easily accessible for work men to anchor in order to avoid fall impact load on workmen.

23.6.3 Anchor line erected for anchoring the lanyard shall be remain in tension condition at all time to avoid any type of sagging and such lifeline shall confirms the national standard. Most preferably, steel wire rope with appropriate tensioning device should be used. The anchor line anchorage prost/structure shall be rigid enough not to deformed during rope tension.

23.6.4 Retractable type fall arrestor shall also use while ascending/descending on any vertical structure like

access to tower crane, gantry crane etc.

23.6.5 Worker men should be properly trained in use of safety harness and its anchoring.

23.7 Working Platform:

23.7.1 Working platform as erected should be of sound material and of adequate strength to serve the purpose for which these are to be used.

23.7.2 Any surface upon which any supporting structure rests shall be of sound material, stable, of sufficient strength to support the structure safely upon which working platform and any loading intended to be placed on the working platform.

23.7.3 Working platform shall be secured properly to avoid any dislodging from its intended position. It is designed to suit the number of workers to be deployed on each bay of a scaffold work on such platform and the materials or articles and tools to be carried with them in such bay.

23.7.4 Working platform should be fully decked, of sufficient width (at least of min. 900 mm width) and does not have any slip/trip hazards. Board, plank and decking used in the construction of a working platform is of uniform size and strength and can support the load and number of building workers in accordance with the relevant national standards keeping in view of the safety of workers

23.7.5 No board or plank which forms the working platform is projected beyond its end support unless it is effectively prevented from tripping or lifting. Cantilever type working platform shall not be used in any circumstances until unless its design gets certified by designer for its safety and stability and maximum load to be imposed. The same shall be submitted to Employer for review and approval.

23.7.6 Proper and safe access to working platform should be provided. Working platform made of grating type/drop in type should be used. Oversized platform shall be discarded. Metal decking, forms part of a working platform, is provided with non-skid surface.

23.7.8 A working platform and any supporting structure shall not be loaded so as to give rise to a risk of collapse or to any deformation, which could affect its safe use. Concrete, debris or other material shall be not allowed to accumulate at any platform on a scaffold.

23.7.9 Safe working load and the number of building workers to be employed in each bay of a scaffold are displayed for the information of all the persons deployed at such construction site.

23.8 Fragile Surfaces/Steep Roof

23.8.1 Contractor shall ensure that all practicable measures are implemented to protect workers against sliding/fall while carrying out work on steep roofs. Only trained worker should be deployed for working on steep roofs.

23.8.2 Roofing brackets should be used on steep roof and should be constructed to fit the pitch of steep roof and such brackets are used to provide level working platform.

23.8.3 Roofing bracket should be properly secured in its place by suitable means.

23.8.4 It shall be ensured that crawling boards used for work on steep roofs are of adequate strength, made of sound material and should confirm the relevant national standards.

23.8.5 Adequate arrangement like ridge hooks should be done to ensure that crawling board is properly secured to a steep roof on which it is used.

23.8.6 A firmly fastened lifeline/anchor line of adequate strength preferably wire rope be strung beside each crawling board throughout its length when using crawling boards.

23.9 Mobile Elevated Working Platforms (MEWP)

23.9.1 Contractor shall ensure that Mobile Elevated Working Platform (MEWPs) which includes Sky Lifts as well as Scissor Lifts shall be used as means of access/egress wherein there is impossible to use safe & sturdy means of access/working platform in the form of stair tower/scaffold etc. Contractor shall mobilized sufficient number of MEWP to ensure smooth work. At any stage of work, based on work, if Employer seems that number of MEWP on project required to be increased, the same shall be increased by contractor in quantity as decided by Employer.

23.9.2 Rough Terrain types Mobile Elevated Working Platforms (MEWP) confirming to internal standards shall only be used at site. Locally fabricated/assembled Truck Mounted Mobile Elevated Working Platforms (MEWP) is prohibited to be used at site.

23.9.3 Apart from the daily inspection by operator, every MEWP shall thoroughly inspected by Plant & Machine In-charge on monthly basis and report of the same shall be submitted to Employer.

23.9.4 Whenever MEWP being used at site, responsible qualified and competent supervisor as nominated by contractor should be available at all time of work. Operator shall also be properly trained for operating the machine.

23.9.5 MEWP shall be used in accordance with international requirements as mentioned in standard (BS 8460: 2017 on Code of Practice for the safe use of MEWPs).

24.0 Ladders & Scaffolds

24.1 Ladders

24.1.1 Ladder shall be of good construction, made of sound material and of adequate strength for the intended purpose for which it has been made and should confirms with the relevant national standards.

24.1.2 It shall be lashed to a fixed structure at top as well as at the bottom of the ladder at all time of work especially while working and such ladder does not slip in any condition.

24.1.3 Ladder shall not be kept on loose bricks or other loose packing and has a level and firm footing.

24.1.4 Ladders irrespective of length shall be provided with proper handrail and should be made of adequate strength to withstand the side impact load.

24.1.5 Every ladder shall be

(i) Secured to prevent undue swaying;
(ii) Equally and properly supported on each of its upright
(iii) So, used as not to cause undue sagging;
(iv) Placed as nearly as possible at an inclination of four in one.

24.1.6 Ladder having missing rungs or defective rungs or a rung which depends for its support solely on nails, spikes or other similar fixing. Round rungs shall not be used in any circumstances.

24.1.7 Ladders made of material other than metal and more than 9 mtr in length shall not be used. At least 1 mtr length of ladder should be extended above the place of landing to which it provides access and be

placed in 1:4 (horizontal to vertical)/ 75 degree of angle.

24.1.8 Extension type ladder shall not be used in any circumstances.

24.2 Scaffold

24.2.1 Scaffold shall be of good construction, made of sound material and of adequate strength for the intended purpose for which it has been made and only metal scaffold confirming to relevant national standards shall be used.

24.2.2 Scaffold shall be erected, added, altered or dismantled under the supervision of responsible person who should be qualified and competent and properly trained to supervise such work to be carried out safely. Such responsible person should be designated as 'Certified Scaffolder' after undergone a proper training and details should be mentioned on information board at site.

24.2.3 Measures to ensure its stability like provision of diagonal/cross bracings, provision of base plate, sole plate, anchoring with wall with maximum gap of 3 metre between two anchoring point in any direction shall be implemented. Scaffold shall not be erected on loose bricks or other loose material/packing and should have a level and firm footing.

24.2.4 Scaffold shall not be partly dismantled and allowed to remain in such a condition unless the stability or safety of the remaining portion of such scaffold has been ensured by a certified scaffolder;

24.2.5 After erection, certified scaffolder shall inspection the scaffold and if found safe then will issue a 'Safe for Use' tag and after that only worker allowed to work at such scaffold. In case, there is any non-compliance observed, should be complied immediately till date time 'Unsafe for Use' tag should be displayed along with warning signs in Hindi and local language.

24.2.6 Standards of a scaffold is in plumb, fixed sufficiently as well as spaced as close as practicable to ensure the stability of such scaffold having regard to all the possible working situations and conditions for the intended use.

24.2.7 Ledgers of scaffold should be placed at vertical intervals with maximum of 500mm gap between each other with due regard to safety and stability of such scaffold

24.2.8 Worker shall not be allowed to get access on scaffold which has been damaged or weakened unless adequate measures have been taken to ensure safety of worker.

24.2.9 It shall be ensured that all necessary and practical measures are implemented/ensured to avoid worker, working on a scaffold, from encountering the electric wire or dangerous equipment.

24.2.10 Where construction activities while working of scaffold pose hazards to pedestrians or vehicular traffic nearby from the falling of material, screening nets in form of debris net or other suitable means shall be used to envelope such scaffold.

24.2.11 The height of tower scaffold should not be more than 1:4 unless such scaffold is adequately lashed with fixed structure. In case being used as means of access, additional appropriate measures shall be ensured.

24.2.12 Mobile tower scaffold should be only be used after ensuring its stability and adequately weighted at the base and be used only on plain and even surface. Castors are provided with positive locking devices to hold scaffold in position. It shall be ensured that, person should not be on board scaffold, tools, material when it is being shifted from one position to another.

24.2.13 Suspension scaffold shall be provided at each of its suspension point with secondary safety wire rope with automatic locking or similar safety device mounted on each of such rope so that secondary safety rope supports the platform in the event of failure of primary suspension wire ropes.

24.2.14 Counter part of the suspended scaffold shall be properly fixed with the surface and be counter-balanced by counterweight as recommended by OEM and should be inspected at least on weekly basis by responsible person.

24.2.15 Cantilever scaffolding shall not be erected until unless the design/drawing of the same is certified by designer for its safety & stability and be submitted to Employer for review and approval.

25.0 Structural Frame and Framework

25.1 Competent and trained worker shall only be deployed for erection, alteration as well as dismantling of structural frame or framework, and performance of an engineering work, framework, false work and shoring work and under the supervision of qualified, competent and trained responsible person which may be designated as 'Temporary Work Coordinator'. Such work shall be inspected by him after erection and be certified as 'Safe for Use' before allowing workers

25.2 Adequate measures should be taken against hazards arising from any temporary state of weakness or unsuitability of a structure.

25.3 Formwork and false work are so designed, constructed and maintained that such formwork and false work support the load that may be imposed on them. The design/drawing of the same shall be certified by designer for its safety of worker, stability as well as load bearing capacity and be submitted to Employer for review and approval.

25.4 While carrying out such formwork and false work, it should be ensured that working platform, safe means of access, bracing, means of handling and stabilizing could easily be fixed with such formwork

25.5 All structural frame and framework especially form work shall be inspected by responsible person at least on weekly basis.

25.6 It shall be ensure that all adequate measures are in place before deploying any work for erection/dismantling of any type of structural material/frame like safe working platform, safe means of access, safety harness along with adequate anchorage points, catch platform etc.

25.7 All reasonably practical measures should be taken to avoid injury to any worker or damaged to any nearby structure or equipment while structural steel or prefabricated parts are handled or stored or transported or raise dot lowered.

25.8 Steel trusses shall be adequately shored or braced (with each other through diagonal or horizontal bracing or any additional bracing as required) until they are permanently secured in position and should be erected on firm and compacted surface preferably on concrete slab having adequate load bearing capacity.

26.0 Lifting Appliances & Operation and Lifting Gears

26.1 All lifting appliances, including their parts and working gear should always be maintained in good repair and working condition and free from any defects.

26.2 Lifting appliances shall be provided with/ or ensured adequate and efficient brakes capable of preventing fall of a suspended load and of effectively controlling such loads while it is being lowered; act without shock; and have shoes that can be easily removed for running.

26.3 Control levers should be provided with suitable locking devices to prevent accidental movement or displacements.

26.4 Test and Periodical Examination of Lifting appliances and Gears

26.4.1 Lifting appliances of capacity 150 MT or more and gantry cranes including all parts and gears thereof, whether fixed or movable shall be thoroughly tested and examined by a competent person once in every three (03) months or after it has undergone any alterations or repairs liable to affect its strength or stability and for rest lifting appliances/machines it shall be done on every six (06) months. Within the validity, if the lifting appliances are shifted to a new site (change of contractor/project), re-examination by the competent person for ensuring its safety shall also be done.

26.4.2 Lifting appliances shall not be overloaded in any circumstances except for testing by competent person and in controlled environment.

26.4.3 Third Party Test certificate as issued by competent person along with other document should be kept in operator cabin.

26.4.4 A static/dynamic QR code should be generated containing the key details of lifting appliances like crane make/model, registration/serial no., rated capacity, present SWL, Max. boom length, TPI date/due date, ASLI status, wire rope dia., number of falls etc. Crane make, Model & registration no/serial no. shall also be mentioned at the bottom of the code. Printed & proper laminated copy of the code should be pasted on the machine at such location couldn't create any visual hindrance to operator and can easily be scan by person without disturbing the operator.

26.5 Crane Safety Equipments

26.5.1 Every lifting appliances where safe working load may be varied by raising or lowering of the boom or otherwise, shall be attached with an **Automatic Safe Load Indicator** approved by Bureau of Indian standards/ International certifying bodies which gives a details of the crane configuration at the time of lifting as well as warning whenever the load being handled exceeds the safe working limit. ASLI should also have function of automatically restrict the control levers to avoid overload.

26.5.2 During the lifting operation, it's not possible to enquire regarding the ongoing lifting configuration, a **LED panel** which continuously reflects the reading as displayed on ASLI screen. Provision regarding the same be made in advance while ASLI installation.

26.5.3 **Over Hoist Limit Switch** shall be installed and always kept in working condition to avoid any incidental over hoisting. **Motion limiting device** shall also be fitted which automatically restricts a crane motion or initiates the stopping of a motion and should also be linked with ASLI.

26.5.4 **Overload Cut Out devices** shall be fitted to cut out any selected crane motion when the crane is in an overload situation.

26.5.5 Every lifting appliance should be fitted with **Data Logger** which continuously monitored the crane/lifting configuration. Such system should also be connected over internet for live data tracking and recording and should have sufficient storage capacity.

26.5.6 **Anemometers** or other wind speed measuring devices should have their indicators mounted in clear view of the crane driver or where appropriate, the person controlling the lift being undertaken.

26.5.7 When two or more cranes being used and identifies a risk of cranes and/or the fixed load attachments entering or over sailing a prohibited zone; or colliding with the fixed structures, other cranes and/or other

mobile plant shall be fitted with **Zoning and Anti-collision devices** and their functioning should be confirmed during the pre-use inspections.

26.6 CCTV

26.6.1 Use of lifting appliances totally depends on the virtue of the operator which required continuously monitoring throughout the lifting operation. In view of that, contractor shall ensure CCTV camera inside the operator cabin for viewing the operator behavior as well as outside the cabin to view the complete lifting operation and should be connected through WI-FI.

26.7 Multi-Crane Lift Down-Rating System

26.7.1 In regard to various factors affects the lifting capacity of cranes, minimum of 10% down-rating from crane SWL be considered before planning for any lifting operation. In case of complex lifting involving two or more cranes, minimum 25% down-rating shall be considered on rated load chart, but it may be increased based on the various scenarios like site condition, site constraints, adjacent area, machine condition, material to be lifted etc.

26.7.2 Additional mode should be programmed into the cranes rating capacity Indicator (ASLI) which down-rates the maximum lift capacity in all duties when the mode is selected (typically by 25% or more as required) and ensures that an external visual indicator indicates (LED display outside the cabin) the mode is selected and other crane configurations.

26.8 Factors to be considered when planning for lifting:

(i) Weight of the Load
(ii) Centre of gravity
(iii) Weight of the lifting accessories/attachments
(iv) Capacities of the lifting accessories/attachments
(v) Choices of cranes
(vi) Synchronization of crane motions
(vii) Positioning of cranes
(viii) Workability of Safety Devices
(ix) Availability of qualified & competent lifting engineer
(x) Capacity down-rating especially during complex lift
(xi) Weather conditions: electric storms, strong winds, heavy rains etc. may imposed load on crane and adversely affect the safety of crane operations.

26.9 Slinging, Slinger – Signaler

26.9.1 Load slinging shall only be performed by qualified and competent slinger or under his supervision. While slinging, factors like load dimension, weight, center of gravity of load, suitability of slings, slinging materials etc. to be considered.

26.9.2 Signals for lifting operation shall only be delivered by qualified and competent signaler. Slinger as well as signaler shall be available at site during any lifting operation.

26.9.3 Hand spliced slings shall not be used at site for any lifting purpose. Sling shall not be wrapped in hook while lifting. Whenever, more than one sling used for any lifting, it should be attached to crane hook through master ring only.

26.10 Crane Operator, Lifting Engineer/Crane Coordinator

26.10.1 Operator deployed for crane driving as well as its operation shall be above 25 years old and in case of complex lifting, he shall be at least 30 years old.

26.10.2 He should be at least matriculation pass and competent to operate crane and possess knowledge of the inherent risks involved in the operation of lifting appliances and should have undergone formal training on lifting operation before deployed at site. In case of complex lift, contractor Plant & Machine In-charge and Chief SHE Manager should ascertain his qualification and relevant experience in complex lift.

26.10.3 He shall be medically fit (both physically as well as mentally).

26.10.4 Crane driver/operator should hold a valid heavy transport vehicle driving license or as issued for specific type of vehicles.

26.10.5 Plant & Machine In-charge shall issue a 'Operator Competency Certificate' to each & every crane operator after ascertaining his qualification, relevant experience for which being deployed, practical as well as theoretical assessment, training, medical examination etc. Certificate should contain the following:

(i) Competency certificate number
(ii) Clear recent photograph
(iii) Age/Date of Birth
(iv) Driving License no. & type
(v) Lifting operation training date
(vi) Medical Examination date
(vii) Certificate issue and expiry date
(viii) Type of crane & capacity can operate
(ix) Type of lifting
(x) QR- code having all details as mentioned on certificate

Certificate should be issued in ID card sized card and all details are pre-printed on it and properly laminated to avoid any tempering.

26.10.6 Competency certificate should also have pre-printed horizontal colored strip of 15 mm wide with text 'Operator Competency Certificate'. Strip should be 'Green' for single crane lift and 'Yellow' for complex lift.

26.10.7 Appointed lifting Engineer should be at least Diploma holder in Civil or Mechanical Engineering and should be properly trained in safe lifting operation including planning & supervising etc. One lifting Engineer shall be deployed at each site/shift wherever lifting is being performed. Respective Site Civil Engineer/Mechanical Engineer having required qualification and competency may also be deployed subject to his complete concentration on lifting operation. In case of complex lift, a dedicated lifting engineer shall be deployed.

26.11 Crane sitting

26.11.1 Sitting of the crane should take account of all the factors that could affect its safe operation:
(i) the crane standing or support conditions;
(ii) the presence and proximity of other hazards;
(iii) hazards associated with working on or adjacent to as highway or railway or any other public carriageway/area;
(iv) the effect of wind
(v) the adequacy of access to allow the placing or erection of the crane in its working position and

for dismantling and removing the crane following completion of lifting operations.

26.11.2 Cranes having outriggers shall be fully extended and all tires should be clear from the ground while performing any type of lifting operation.

26.11.3 Level indicators and inclinometers shall be fitted and used in accordance with the instruction manual and maintained in good working order.

26.11.4 In order to avoid point load on ground surface and ensure uniform distribution of upcoming load to ground, a single piece high density blocking under outrigger floats in form of steel or wooden slab or any other appropriate material capable to take imposed load of crane as well as weight to be lifted without any distortion. Out rigger floats should be at least twice the diameter of the outrigger own base and in case of heavy lift or complex lift, it should be at least thrice. Blocking under outrigger floats shall meet the following requirements:

(i) sufficient strength to prevent crushing, bending, or shear failure
(ii) such thickness, width, and length, as to completely support the float, transmit the load to the supporting surface, and prevent shifting, toppling, or excessive settlement under load

26.12 Documents to be kept in operator cabin

Following documents should always be available/or kept inside the operator cabin:
(i) Rated capacity chart (crane load chart)
(ii) Operating instruction manual
(iii) Reports of thorough examination/test certificates
(iv) Maintenance records

26.13 Gantry Cranes

26.13.1 **End Stops and Buffers** shall be fitted at all ends of the rail and gantry respectively and properly maintained throughout the service. Temporary wheel locking arrangement shall also be provided which can be engaged whenever; crane gets halted for some time and left unattended. Such arrangement should be intact with the wheel assembly so get it can easily be engaged whenever required and should be properly locked with rail. Additional locking arrangement should also be adopted through which crane can be locked with ground. Through these arrangements, it should be ensured that, crane has been locked with rails as well as ground in unattended condition.

26.13.2 Hard railings as means of separation from hazard arising from moving crane shall be provided along the gantry track to avoid any worker or other material getting in contact with any part of crane during its movement.

26.13.3 Gantry cranes shall be provided with fail safe devices to avoid any hoist free fall in case of brake failure as additional measure.

26.13.4 Preventive maintenance of Gantry Crane especially Hoist should be carried out by OEM on half yearly basis and certificate of the same be issued. Apart from it, Plant & Machine In-charge shall also inspect the crane on monthly basis.

26.13.5 Hoist shall be made weatherproof i.e should be cover with sturdy shed from all around to avoid any water impact on hoist.

26.14 Pick and Carry (Hydra) Crane

26.14.1 Contractor shall only deploy 'Truck Transmission type' 2nd generation model or of advance/latest technology crane capable for multitasking.

26.14.2 These cranes should not be deployed for any other purposes except for the following until unless such crane is designed for intended purpose and Employer is agreed for deployment at site:

(i) Trailing purpose for pile cage lowering, radio tower/electrical pole or any other long structure erection required support from other end.
(ii) Material handling at static location i.e can pick and load the material on trailer or any other vehicle from lifting location and on firm ground surface only.

26.14.3 For material handling at site or outside the site premises, loader crane of sufficient lifting capacity as well as having storage space shall be used. Pick & Carry (Hydra) crane with any type of lifted load shall not be allowed on public road/or outside the site premises.

26.14.4 Outriggers of Pick and Carry hydra shall always be kept in fully extended position on blocking of sufficient size whenever being taken in use.

26.14.5 Pick & Cary cranes shall not be used for any lowering operation below the ground level.

26.15 Tower Cranes (Fixed or Moveable)

26.15.1 Crane shall be installed by competent person /or under his supervision and in such a manner that appliance cannot be displaced by any load, vibration or other influence; operator is not exposed to danger from loads, ropes or drums.

26.15.2 Adequate clearance should be provided between parts or loads of lifting appliance and the permanent structure such as walls & objects like posts or any electrical conductors

26.15.3 Ground surface on which a tower crane stands should have adequate bearing capacity and shall be firmed & leveled properly. Such cranes are erected at a reasonably safe distance from excavation and be operate within limits as specified by manufacturer.

26.15.4 Tower cranes shall be sited in such a way that the loads are not handled over any occupied premises, public thoroughfares, and railways or near power cables etc.

26.15.5 When two or more cranes are operated at same place, measures to ensure positive and proper communication between operators of such cranes to avoid any danger or dangerous occurrences should be adopted. Zoning and Anti-Collision device should be installed and kept in fully functional condition.

26.15.6 Appropriate fall arrestor arrangement shall be installed at access location to the tower crane to prevent incident fall from height during ascend/descend.

26.15.7 All such cranes shall be inspected & certified by Plant & Machine In-charge or third party after its installation and before taken in use whenever, kept in idle condition for long time. Plant & Machine In-charge should also inspect the crane on monthly basis and recorded.

26.15.8 Only qualified & competent crane operator adequately trained and medically fit for operating crane from height is deployed.

26.16 Winch Machine

Contractor while using winch machine shall ensure that:

(i) winches are not used if control levers operate with excessive friction or play;
(ii) adequate protection is provided to winch machine as well as winch operator against abnormal weather;
(iii) control levers are secured in the neutral position and winches shall be power shut-off whenever winches are left unattended;
(iv) No worker is authorised to transfer, alter or adjust electric control circuits except electrician along with winch operator;
(v) apart from mechanical brakes, winches shall also have the provision of OEM fitted electrically operated braking system;
(vi) anchoring and stability of the winches shall be ensured and certified by Plant & Machine In-charge;
(vii) Standard counterweight as per OEM recommendation shall only be used.
(viii) Winch drum should be properly protected from all around to avoid any injury occurred due to wire rope failure.

26.17 Vacuum and Magnetic Lifting Gears

Contractor while using vacuum and magnetic lifting gears shall ensure that:

(i) vacuum lifting gear, magnetic lifting gear or any other lifting gear where load on it is held by adhesive power shall not be used/operated while workers are performing operations beneath /or adjacent to such gear.

(ii) lifting gear used in work shall be provided with an alternative supply of power, such as batteries which may come in operation in case of power failure.

(iii) worker shall be allowed to work within the swinging zone of the lifting gear or load, or material suspended to such gear.

26.18 Derricks

While using derricks at site, following should be ensured:

(i) Appropriate measures shall be adopted to prevent foot of the derrick to lift out of its socket or support.

(ii) All guy ropes of the derrick shall be adequately anchored to rigid points and should in tension with the use of turn buckle without any sagging and at least four guy ropes should be used for anchoring. Shear connectors/rails of the track shall not be used for derrick anchoring.

(iii) A register shall be maintained for fitness of the derrick which shall include all elements like derrick setup, anchoring, lifting tools & tackles, means of access and should be filled & signed after every shifting of the derrick by responsible execution person.

26.19 Lift Plan

26.19.1 Contractor shall submit the proposed lifting plan to Employer for review & approval well in advance at least 07 days before performing any lifting operation involving load weighing more than 01 ton and 14 days in advance in case of complex lift.

26.19.2 The format for submitting the lift plan would be provided by the Employer. The minimum document/contents to be attached with the lift plan:

(i) Crane Documents – Third party test certificate, OEM load charts, Registration certificate (last two machine registration), Insurance certificate, undertaking for crane age declaration, major maintenance/part change record etc.
(ii) Crane positioning and load slinging sketch w.r.t site condition & constraints reflecting complete rigging parameters like lifting points, sling angle, adequacy of lift point etc.
(iii) Details of lifting engineer, slinger-signaler, operator with its competency certificate.
(iv) Details of load to be lifted
(v) Details of lifting gears, tools & tackles

26.20 Operation of Lifting Appliances/Gears

Contractor shall ensure that adequate and appropriate safety measures are implemented/ensured while performing any lifting operation. However, some key requirements are enlisted below for their strict compliances:

(i) Lifting appliances shall not use as means of access for height work or any other work involving temporary attachments like man basket/cage etc. with the appliance.

(ii) Complete lifting operation shall be performed under competent supervision involving lifting engineer, slinger-signaller, and site civil execution person.

(iii) Lifting appliance shall not be left unattended by operator while power is on or load is suspended.

(iv) After completion of the lifting operation, all doors of the appliances shall be closed by the operator and ignition/operation key should be handed over to competent reliever operator or site In-charge.

(v) Every receptacle/material bucket used for hoisting bricks, tiles, or other material shall be enclosed from all side including bottom completely to prevent fall of any material. No wheelbarrow shall be used to lift or lower the material. Such receptacle or bucket shall not be overloaded, or the material shall not cross the top level of the bucket and should also be closed from top before lifting.

(vi) No close working to any live overhead power line is permitted without system of a 'Permit to Work' and prior permission of the Employer shall be obtained before performing such operation.

(vii) During shifting of material near open edges, signalman and other workers shall not be allowed to lean out for communicating with ground staff unless they are provided with full body safety harness duly anchored with sturdy points.

(viii) Slings should not be wrapped with hooked or knotted.

(ix) Lifting operation for handling load above one ton shall not be allowed without approved of lift plan/study and work permit. The work permits as well as checklist with cross reference of approved lift plan shall be signed by the nominated lifting engineer before performing any lifting operation.

(x) Crane manufacture load chart shall only be used at site and in case if original load chart is not available, crane shall not be allowed to enter inside the site premises.

(xi) Before performing any lifting operation, all electronic devices, control levers, hydraulic oil, wind pressure etc. shall be checked and necessary spare parts to be kept in stock to handle any breakdown during time bound lifting operation.

(xii) Underground utilities shall be identified, and necessary measures shall be adopted before setting up of cranes for lifting.

(xiii) Equipment's including Electrical panels, Hoist etc shall only be lifted with the help of lifting point/eye bolts as provided & recommended by the original equipment manufacturer.

(xiv) Lifting point shall be considered on the I-Girders/U-Girder/C-Girder/Steel girder/parapet etc during the casting of the same. Design load calculation for the same should be conducted and submitted to Employer.

(xv) Lifting and lowering of the plant & machines like transit mixer, excavator, tractor etc shall be done as per recommendation from the Original Equipment Manufacturer especially enlisted the lifting points.

(xvi) Certification from designer for the stability and load bearing of "A" frame used for lifting of the escalators shall be obtained and submitted to Employer before its use.

(xvii) Lifting activities shall be stopped in case of high-speed wind and similar adverse whether condition or as prescribed by the crane manufacturer.

(xviii) All cranes shall be fitted with fail safe devices to avoid any hoist free fall in case of brake failure.

(xix) In case of complex lift involving use of two cranes, adequate arrangement for synchronization of operation shall be ensured/implemented. Use of more than two cranes is not permitted in any circumstances.

26.21 Maximum Permissible Crane Age

Based on various factors like crane utilization in various site/weather condition, wear & tear, maintenance, change in critical parts, human error, crane handling by different operators etc., the maximum permissible age for various cranes/equipment's has been decided by the Employer and contractor shall implement the same wherein maximum age for any crane operated on hydraulic system is 10 years and for crane operated on mechanical system is 15 years The details regarding maximum permissible crane age criteria for various cranes are attached at **Appendix – VIII**.

26.22 Color coding of lifting gears/tools & tackles

All lifting gears/tool & tackles shall be color coded on quarterly basis after ascertaining that, such gears, tools & tackles are fit to use. The recommended colour coding to be adopted at site:

(i) GREEN: January – March
(ii) YELLOW: April – June
(iii) BLUE: July – September
(iv) WHITE: October – December

27.0 Excavation and Tunneling

27.1 Excavation

27.1.1 Supervision

(i) Contractor shall appoint a experience person for ensuring the safe operation of excavation work. He should inspect the work on daily basis and take remedial measures to avoid any unsafe practice or conditions.

(ii) Excavated area should also be inspected by competent person whenever worker are required to be deployed for such excavation work and after any adverse weather condition like rain, storm etc. which may lead to such excavation in hazardous condition and adequate protection against slides and cave-in shall be adopted.

27.1.2 Edge Protection & warning signs

(i) Excavated material should not be stored at least 0.65 meter from the edge of an open excavation or trench and the banks of such excavation or trench are stripped of loose rocks and other materials which may slide, roll or fall upon a construction building worker working below such bank.

(ii) Ladders with handrail and staircases or ramps shall be provided for safe access to and egress from excavation and such arrangement should comply with the relevant national/international standards.

(iii) Trench and excavation is protected against falling of a person by provision of hard guard rails along with toe board and if the depth of such trench or excavation exceeds 1.5 m, such edge protection arrangement should be submitted to Employer for review and approval.

(iv) Any machinery/equipment used in excavation should be positioned in such a way that such machinery does not endanger the operator of machinery or any other site personnel. Where heavy machinery like dumpers, TM, crane etc. are required to be used near excavation area, shall be parked/used at least 6 meter from the excavated edge which is properly shored/protect and there is no probability for any type of collapse or damaged to shoring/timbering of the side of the excavation.

(v) Appropriate warning signs and notices shall be displayed or erected at conspicuous places in Hindi and in language understood by the majority of workers Signs and notice should be clearly visible, easy to understand as well as may be made with retro-reflective paint to ensure their visibility in dark hours also.

27.1.3 Stability of Structure

(i) Where worker engaged in excavation is exposed to hazard of falling or sliding material or article from any bank or side of such excavation which is more than 1.5 meter above his footing, such worker is protected by adequate piling and bracing against such bank or side. The certified drawing of the same shall be submitted to Employer for review & approval.

(ii) When stability of any structure adjoining workplace or other area to be excavated is under doubt/danger, arrangement like underpinning, piling, shoring or other suitable means to support such structure or to prevent injury to workers shall be arranged.

(iii) Temporary sheet piling installed for the construction of a retaining wall after excavation shall not be removed until advice by the Employer.

(iv) Undercutting during excavation shall be strictly avoided however, if such conditions are inescapable and banks of an excavation are undercut, adequate shoring should be provided to support the material or article overhanging such bank.

(v) Plank used for sheet piling should be of sound material having adequate strength. Shores and braces should be of adequate dimensions and are so placed as to be effective for their intended purposes. Earth supported shores or braces should bear against a footing of sufficient area and stability to prevent the shifting of such shores or bracing.

(vi) Identification of utilities and their diversion shall be carried out prior excavation. Clearance from concerned utility authority/department should be obtained prior to start of work or may be carried out in close coordination with them. In addition, contractor should also mobilize their own equipment's for detecting any underlying utility especially electrical cables.

(vii) Adjacent area/building/structure shall be continuously monitored through installation of appropriate instrument to monitor the settlement if any occurred during tunneling process.

27.2 Tunneling

27.2.1 General

(i) Adequate measures by means of rock bolts, segments or steel sets should be taken to avoid any danger of falling or sliding of material from the roof surface or wall of a tunnel.

(ii) Excavated area should be made safe by use of suitably designed and installed steel sets, rock bolts or other suitable safe means.

(iii) Workplace shall be inspected before commencement of work in a tunnel and at regular intervals at least once in a month. He should able to recognize hazards associated with tunnel construction work activities.

(iv) Portal area of a tunnel with loose soil, or rock, likely to cause injury to a person should be adequately protected with supports.

(v) It should be ensure that good personal hygiene, particularly where workers involves contact with contaminated ground and with irritant or caustic substances should be ensured throughout the currency of work. Toilet facilities should also be maintained in hygienic condition.

(vi) All reasonable practical steps should be taken to reduce noise exposure, including substitution by less noisy equipment or by placing machinery in noise enclosures.

(vii) The influence of local weather conditions on tunnel construction should be taken into account, e.g pattern of rainfall and barometric pressure changes and the likelihood of electric storms. Daily rainfall data from the relevant authority should be obtained for comparison with periods of observation in ground water conditions.

(viii) Groundwater test should be performed.

27.2.2 Launching/Retrieval shaft

(i) Adequate measures to avoid ingress of water from nearby catchment area should be adopted. If required, retaining wall of sufficient height should also be constructed.

(ii) Safe means of access in form of fixed staircase or rigid tower staircase or other safe means

shall be constructed/ erected before allowing any workmen in the launching shaft and from landing point of such access to tunnel entrance or other areas.

(iii) Adequate measures like shoring, concrete piping, steel casing or other means/material of adequate strength shall be provided. A reinforced concrete raft and beam should also be provided around the opening of a shaft if the ground surrounding of such opening is unstable or unsafe.

(vi) Appropriate warning signs and notices should be displayed or erected at conspicuous places in Hindi and in language understood by the majority of workers Signs and notice should be clearly visible, easy to understand as well as may be made with retro-reflective paint to ensure their visibility in dark hours also.

(iv) Appropriate rigid guard rails along with toe board of adequate strength should be erected all around the shaft at least 0.65 meter from the edge of launching shaft.

27.2.3 Access control inside Shaft

(ii) For ensuring the control on access of person inside the launching/retrieval shaft, a tally board shall be installed at the entrance of such shaft under the control of qualified person. He should maintain all records of the access/egress in proper manner of each & every person.

(iii) For access/egress control inside the tunnel, a person should be deployed to maintain the entry records of each & every person getting access /egress in such area and same to be updated in tally board room at the end of the shift w.r.t access/egress inside the launching/retrieval shaft.

(iv) Access control through tally board system should be automatic and smart card of every person be punched upon entering and leaving the shaft and same should be ensured by deputed person. Such system is connected through internet so that real time occupancy inside the shaft/tunnel can be done.

(v) For visitor/Employer, the entry should be electronically done by entering the brief details like name, designation, & organization name.

(vi) After punching the card/capturing the details of person, a token be issued to person entering such area and should always be kept in visible condition.

(vii) System/finishing/track or other contractor's personnel should follow the main contractor access control system as decided by Employer.

(viii) Tunnel SHE induction should be given to all people entering the shaft/tunnel at the first time and be properly documented in electronic form.

(ix) Person without ID card should not be allowed to enter the shaft/tunnel in any circumstances and if any person or contractor is violating the system, shall be reported to Employer.

(x) The record of the access control should be submitted to Employer as and when required

27.2.4 Atmosphere monitoring

(i) The working environment inside the tunnel or a shaft should not contain any hazardous substances in concentration beyond the permissible limits as laid down in national/international standards or national legislation. The limits of certain key substances is also given below:

Contaminant	Hazard	Long term exposure	Short term exposure	Lower explosive limit (%)	Upper explosive limit (%)
Carbon monoxide (CO)	Toxic	30 ppm	200 ppm	12.5%	74.2%
Carbon dioxide (CO2)	Asphyxiant	5000 ppm	15000 ppm	N/A	N/A
Nitrogen oxides NO	Toxic	25 ppm	35 ppm	--	--
Nitrogen oxides (NO2)	Extremely toxic	3 ppm	5 ppm	--	--
Methane (CH4)	Explosive and asphyxiant	--	--	4.4	14
Hydrogen sulfide (H2S)	Toxic and explosive	10 ppm	15 ppm	4.3	45.5
Sulfur dioxide (SO2)	Toxic	2 ppm	5 ppm	--	--

Based on hazard, following is the limits for warning and evacuations:

Hazard	Warning	Evacuation
Oxygen (deficiency)	19.5% by volume	19% by volume
Oxygen (enrichment)	22% by volume	23% by volume
Flammable gas	5% LEL	10% LEL
Toxic gas	50% STEL	100% STEL

(ii) Contractor should conduct necessary test before the commencement of a tunneling work and at suitable intervals of at least once in a period of every 4 hours and should be properly documented and be submitted to Employer as and when required. Apart from the hand held multi-gas monitoring device, online multi-gas monitoring system shall also be implemented.

(iii) A fully controllable balanced ventilation system with the capacity and flexibility to allow growth and adaptation as work progress should be designed well in advance and installed for supplying fresh and hygienic air inside the tunnel. While designing ventilation system, following factors should be considered:

(a) workforce number;
(b) tunnel size;
(c) ambient conditions;
(d) amount and type of plant;
(e) dangerous dust or toxic gases

(iv) A minimum fresh air supply inside the tunnel should not be less than 6 cubic meter per minute ($6m^3/m$) for each worker and free air flow movement inside the tunnel should not be less than nine meter per minute (9 m/m).

(v) The tunnel atmosphere should be considered as oxygen-deficient when the concentration of oxygen falls below 19%. Continuous monitoring of the oxygen concentration should be conducted through fixed monitoring equipment having online monitoring facilities as well as supplemented by portable monitors

(vi) The important aspects of air quality are temperature, humidity and velocity. Hence, the air supplied should be cool and dry as is reasonably practicable, as during its passage into the tunnel its temperature to become that of the tunnel walls and take up moisture in the tunnel.

(vii) The wet-bulb temperature in any working chamber should not exceed 27°C and arrangement be made for its regular monitoring on hourly basis and be proper documented. The humidity inside the tunnel should also be maintained at adequate level which is comfortable for working and adequate arrangement should be in-place. If required, de-humidifier may also be installed to remove excess moisture from air.

(viii) Ventilation fan should be installed at ground surface free from any type of contaminated dust, fumes, vapour and exhaust gases or other contaminants so that fresh air could be supplied. Air filter to remove dust particles should also be installed at the air inlet section. If required filter to remove fumes, vapour and exhaust gases may also be installed.

(ix) Adequate arrangement should also be done to ensure that every air main supplying air to the working chamber, man-lock or medical-lock is protected against accidental damage and where it is not practicable to provide such protection, a stand-by air main is provided.

(x) Every working chamber where compressed air is used, the supply of air should not be maintained less than 0.3 m^3/m per person working therein. A reserve supply of compressed air should always also be made for man-locks and medical locks used at a tunneling work.

27.2.5 Access in the tunnel

(i) Access in the tunnel should be properly identified and provided by safe & ergonomically fit walkways.

(ii) The walkways should be clearly delineated/illuminated and retro-reflective signed as appropriate.

(iii) Walkway should have clear walking space not less than 430 mm wide and should be adequately physically separated from locomotive movement area by means of sturdy guardrail.

(iv) Walkway surface should be maintained in good condition, provide grip and be free from hazards such as irregularities, sudden changes in level, loose boards, obstructions, etc which could cause slipping, tripping or falling. In addition, any structure or utility installed along the walkway side should not create any hindrance/ or obstruction while movement.

(v) Walkway should be made of sound materials of grating type or prefabricated grating plate and always maintained in sturdy condition.

27.2.6 Transport Arrangements

27.2.6.1 Locomotive movement

(i) Locomotive should be selected based on the site condition, work requirement etc. While planning for selection of locomotive, following factors which affects the selection should be considered:
- (a) gradients;
- (b) length of the main locomotive;
- (c) rate of muck removal;
- (d) clearances;
- (e) total mass of cars;
- (f) weight of segments;
- (g) size and availability of locomotive.

(ii) Appropriate training on 'Safe use of locomotive' shall be provided to locomotive driver before deploying them for work.

(iii) Safe operating procedure for locomotive operation inside the tunnel should be submitted to Employer for review & approval. Manufacturers recommendation should always be considered and copy of the same be kept inside the locomotive.

(iv) Anti-collision devices should be installed on locomotive and be interlocked with engine so that in case of any obstruction, locomotive brakes applied automatically and comes to halt.

(v) Rear view camera along with sensors and display unit in operator cabin should be provided. All possible measures be adopted to avoid any damaged to camera/sensor wiring or WI-FI enabled camera may also be used.

(vi) Wi-Fi enabled CCTV camera should also be installed at locomotive as well as back of the cars and be connected over the network for remote access.

(vii) Temporary wheel locking arrangement for locomotive be provided and kept in loco and each car and engaged whenever, loco halt and left unattended.

(viii) Manchester gate with opening & closing visual signals should be installed at both end i.e at the entrance of tunnel and before entry inside the TBM gantry area for segment handling/muck collection. Permanent end stop should also be provided at launching shaft and temporary end stop near TBM.

(ix) Adequate braking arrangement should be provided in loco as well as in all cars of the locomotive. Preference should be given to cars with full or partial air brakes, which are inherently safe than cars that rely on braking by the locomotive only. Main braking arrangement of locomotive should be of fails-safe type or be equipped with secondary manual brake system.

(x) Automatic warning equipment's for warning and controlling the locomotive speed should be fitted to avoid over speeding of locomotive which would leads to serious consequences like collision, derailments.

(xi) The scenario of starting uphill and fro braking should be analyses as adhesion/contact between rail and wheel plays a vital role as it can vary from 25% in good dry conditions to 15% or worse conditions like muck spillage or oil on rails,

(xii) Additional measures should be considered while utilizing locomotive on steep or long gradients. All cars along with locomotive should also be attached with secondary coupling or safety chain of adequate strength as additional measures to avoid their incidental movements.

(xiii) Adequate arrangement should be implemented to ensure that muck from conveyor get directly collected inside the muck collection car through extended hopper attached with flexible rubber hose and muck car top completely be covered with fiber sheet having dedicated top opening for hose.

(xiv) A hazard warning flashlight should be mounted on top of the locomotive. Overloading of muck car should not be done in any circumstances.

(xv) Competency of locomotive operator/driver is issued by Plant & Machinery In-charge along with Chief SHE Manager, & Occupational Health Officer.

(xvi) Plant & Machine In-charge should inspect the locomotive at least once in a month and report submitted to Employer. Locomotive operator/driver should also inspect the same on daily basis.

(xvii) Locomotive driver/operator assistant should also be deployed and loco should only be operated on clearance from his assistant.

(xviii) Adequate arrangement should be in place to ensure the required gauge is maintained between the rails at all time. Standard fish plate shall only be used as rail jointer.

(xix) Person's movement on track shall not be allowed in any circumstance except maintenance activities which should be carried out under supervision and proper work permit system.

(xx) When hauling up a gradient, a locomotive should never be used to haul a load greater than that which is capable of safely braking when travelling down that gradient, without recourse to engine braking.

(xxi) Locomotive should be stop within the range of its driver vision under the worst conditions and for the same distance should not exceed 60 meters.

(xxii) Battery operated locomotive should only be used inside the tunnel and area should be designated outside the tunnel for the safe charging of batteries. Adequate measures should be adopted to ensure that locomotive should be fully isolated by disconnecting the main battery supply whenever, left unattended as this prevents battery overheating and gassing caused by any double earth fault on the locomotive.

(xxiii) Stacked segmental linings should be properly tied up through provision of restraints fitted with the cars to prevent any sliding off and fouling walkways.

(xxiv) Coupling of each car as well as with locomotive should always be kept in closed position so that any probability of incidental jump off is avoided and should be inspected on daily basis.

(xxv) To avoid derailments, turnouts and crossing should be laid on a sound base to accurate gauge and maintained with adequate guide rails and close-fitting switch blades.

(xxvi) For larger tunnels, rubber-tire vehicles may also be used in place of steel wheel locomotive. However, such arrangement should confirm to national/international standards and with prior approval of Employer.

27.2.6.2 Conveyors System

(i) Conveyor should be properly enclosed from all side and also be interlocked with motion to ensure that in case any cover of conveyor left open, the same should be immediately stopped and vice-versa.

(ii) Emergency stop button as well as pull cords should be provided on either side throughout the length of the conveyor and be easily accessible and properly marked for its identification.

(i) Interlocking arrangement shall always be kept fully functional and worker should not be allowed to work on or near conveyor even for a minute work while in motion.

(ii) All rotating/revolving parts should be fully guarded, particularly pinch points between the conveyor belt and the drums.

(iii) Conveyor shall not be used as access to the TBMs cutter head unless until recommended by manufactures.

(iv) Adequate arrangement like conveyor belt high sides should be done to avoid any spillage of

muck from belt on either side.

(v) It should be fitted with anti-runback devices to top prevent the belt running backwards in the event of a power failure.

(vi) Complete arrangement should be inspected on daily basis.

27.2.7 Illumination & Electrical arrangement

(i) Adequate illumination arrangement should be done to ensure minimum required lux is available at all time at all places inside the tunnel. Lightening should be of LED type or any other advance technology and protective enclosure confirms to IP 54 and is operated on reduced low voltage 110 volts, 50 Hz of supply. If required, flame proof luminaries may also be used.

(ii) Apart from the general illumination, battery operated emergency lights should also be installed at every 50 meter interval and be immediately comes in action whenever, general light gets fail.

(iii) Additional source of power supply should also be kept in standby and be automatically comes in action whenever, regular power supply gets fail.

(iv) Industrial electrical panel and other fittings conforming to Ingress Protection - 65 (IP-65) type shall only be used inside the tunnel and if required, flame proof panels/fitting may also be used.

(v) Electrical cables use inside the tunnel should be made fire resistant as well as mechanical damaged proof.

(vi) All electrical panels, fitting as well as cable should be kept at sufficient height and easily accessible for maintenance and free from water contact or mechanical damage.

(vii) Adequate arrangement for secondary earthing inside the tunnel should be made and all electrical equipment's should be double earthed.

27.2.8 Fire Prevention & protection system

(i) At least one portable first aid fire extinguishers of dry chemical power type or ABC type should be kept inside the tunnel at every 100 meter interval and be readily made accessible for use. Instruction for use should also be displayed aside on retro-reflective sign boards.

(ii) Fire hose with hydrant outlets should be available throughout the tunnel at intervals not exceeding 50 mtr. All arrangement should be readily accessible throughout the tunnel and maintained for effective firefighting. The required pressure should always be maintained.

(iii) Automatic fire suppression arrangement like sprinkler, water curtains or gas flooding arrangement should be installed inside the tunnel or such arrangement be fitted with TBM and kept fully functional.

(iv) Audible as well as visual fire alarm system should also be provided.

(v) Adequate quantity of fire blankets should also be kept in safe place for use in any emergency.

(vi) All waste/flammable material should be regularly disposed off the tunnel.

(vii) Arrangement should be in place to avoid over heating of any machinery part/TBM part or any auxiliary equipment and if such condition occurs, appropriate measures should be initiated immediately to control it.

27.2.9 Means of communication

(i) Reliable and effective means of communication like telephone or walkie-talkie should be provided and maintained in fully functional order. Such arrangement should be provided at least at the following locations:

(a) Tally board at the surface
(b) Entrance at the tunnel
(c) At intervals of hundred meters along the tunnel
(d) Working chamber side of a man lock
(e) Inside the chamber of a man-lock
(f) Location conspicuous a lock attendant's station
(g) Compressor plant
(h) First-aid station
(i) Any other locations based on requirement

(ii) Retro-reflective list of key persons as well as services along with their locations & contact nos. should be kept/ or displayed.

(iii) System of standard audio/ or visual warning signals should also be installed and output unit of such arrangement should be kept at the entrance of the tunnel, tally board as well as at office area.

27.2.10 Storage & Use of material

(i) Oils, greases or fuels or any other flammable material should not be stored inside the tunnel and after utilization of such material, all remaining should be taken out immediately. Inflammable oils with flash point below the working temperature that is likely to be encountered should not be used inside the tunnel.

(ii) Petrol/LPG gas or any other flammable substances should not be used, stored inside the tunnel.

27.2.11 Use of Equipment/Machineries

(i) Any diesel/petrol/or other fuel operated equipment's like portable generators, vehicles, etc. should not be used unless responsible person ensure that fumes/exhaust gases/ or sparks should not be emitted by such equipment in any circumstances. In addition, equipment should not create any noise which is beyond the acceptable level as laid down in national/internal standards.

(ii) Portable electrical hand tools as well as inspection lamps used inside the tunnel should be inspected by responsible person before allowing them to use and their operated voltage should not exceed 24 volts.

(iii) Mineral oil filled transformer should not be used inside the tunnel. If required, only air-cooling type, or appropriate fire-resistant synthetic insulating/cooling liquids should be used and with prior approval of Employer and should confirms with national/international requirement.

(iv) Welding sets or other similar equipment's should not be used and if necessitate, adequate arrangement for their safe use is ensured especially safely removal of exhaust gases outside the tunnel without creating any adverse atmosphere/hazard inside the tunnel, should confirms the national/international standards and withy prior approval of Employer before deploying such equipment inside the tunnel.

(v) Oxy-acetylene gas cutting sets and other similar equipment's should not be used inside the tunnel. Hot work inside the tunnel shall not be performed inside the tunnel in any circumstances unless necessitate and prior approval of Employer is obtained.

(vi) Based on the requirement, supply line to pneumatic tools should be fitted with water trap or safety chain or safety wire or any other suitable means.

(vii) High pressure hydraulic hoses and coupling should only be used on hydraulic plants and such hose/couplings should be adequately protected against any possible damage. Only fire-resistant hydraulic hoses are used when hydraulically activates machinery and equipment's are deployed.

(viii) Hydraulic lines and plants working at a temperature exceeding 70^{o}C are protected by adequate insulation or otherwise against incidental human contact.

(ix) Where there is a danger of flammable or explosive atmosphere being prevalent inside the tunnel, only flame proof equipment of appropriate type as per relevant standards should be used.

(x) Adequate arrangement should be ensured that while using transit mixer or any other similar machines/means inside the tunnel should not create any hazard at work area/or block the passage. For any concreting work inside the tunnel, small capacity i.e of 3 cubic meter (3 m^3) should only use or alternate safe arrangement should only be deployed.

(xi) Maximum speed for vehicles used inside the tunnel shall be restricted to 10 km/h and adequate measure/device should be fitted to ensure the same.

(xii) Vehicles inside the tunnel should confirm the national/international requirement on emission control for underground area and if in any case, particulate exceed the prescribed limited should be removed from site or adequate control measure like catalytic convertor to be fitted. However, vehicle engine less than BS-IV rating should not be used.

27.2.12 First Aid Arrangement

(i) Fully equipped first-aid box should be kept at tally board, entrance of the tunnel in shaft, at every 300 mtr. inside the tunnel and in TBM operator cabin or other safe location and should be readily accessible.

(ii) A dedicated competent & qualified first aider should always be deployed and earmarked for tunnel work and be available on each shift.

(iii) Stretcher suitable for confined space should also be kept at the entrance of the tunnel as well as at TBM.

(iv) Locations of first aid box as well as stretcher should be displayed at site along with contract details of occupational health officer as well as first aider.

27.2.13 Emergency control

27.2.13.1 Ground water/ Water flooding

(i) Watertight bulkhead doors should be installed at the entrance of a tunnel to prevent flooding inside the tunnel.

(ii) Adequate quantity and capacity of de-watering pumps should be kept readily available in shaft/ or tunnel in functional condition and be immediately start whenever water level rises or may also be kept in auto mode. Whenever, water level rises abnormally or above a certain warning level, worker should be immediately taken out from tunnel.

(iii) The presence/scenario of ground water should be analyses and accordingly adequate measures adopted to ensure soil stabilization. Sumps made in shaft should be properly covered and properly secured.

27.2.13.2 Self-rescuers

(i) In every tunnel, Self-rescuer sets should be kept in ready condition which is at least 50% of the full occupancy tunnel. Such sets should be provided at TBM as well as mid of the tunnel or based on occupancy location at regular intervals.

(ii) Self-rescuers oxygen cylinder should have at least 20 min of oxygen supply while walking.

(iii) Workers should be properly trained in using such sets whenever, any emergency occurred.

(iv) In long tunnels, a refuge chamber as a place of relative safety should be made and have breathable - air supply as well as protected from mechanical damaged and heat. Scrubbing system should also be installed to remove carbon monoxide and carbon dioxide from the chamber atmosphere. The number of such chambers will be decided by the Employer and detailed arrangement to be made in refuge chamber will be provided at later stage.

27.2.13.3 Rescue

(i) A man-cage should always be kept on ground or inside the shaft with permanently attached lifting gears/tools & tackles for rescuing person in case of emergency. Such cage should be certified by third party.

(ii) Cage should be fabricated in such a way that, injured on stretcher can be safely taken inside the man-cage and gate should be open inward side. Fabrication of cage should be done in such a way that it should not be too heavy

27.2.14 Intervention procedures

(i) Medically fit, experienced and trained person shall only be allowed to work at cutter head area.
(ii) Compressed air should be employed to maintain face support.
(iii) Dedicated hyperbaric ambulance along with doctor dealing with compressed air illness should be deployed at site.
(iv) A 'filter cake' (a skin of slurry material) held by compressed air on the tunnel face should be created and established.
(v) During work on the TBM, a constant watch should be kept for detecting face deterioration.
(vi) Minimum air pressure necessary as recommended by manufacturer to maintain face stability should be applied.
(vii) Simultaneous maintenance should not be carried out on the rest of the system.
(viii) Extensive documented procedures should be framed and submitted to Employer for review & approval well in advance.

28.0 Demolition

(i) Demolition works should be carried out in a controlled system under the experienced and competent supervision.

(ii) Concerned department of the government or local authority may be informed and prior permission is obtained wherever required.

(iii) Glass or similar materials or articles in exterior openings should be removed before commencing any demolition work and all water, steam, electric, gas and other similar supply lines are put-off and such lines so located or capped with substantial coverings so as to protect it from damage and to afford safety to the building workers and public.

(iv) Walls of all structures adjacent to the structure to be demolished are examined to determine thickness, method of support to such adjacent structures.

(v) Demolishing work should not be performed if the adjacent structure seems to be unsafe unless and until remedial measures life sheet piling, shoring, bracing or similar means be ensured for safety and stability for adjacent structure from collapsing are taken.

(vi) Demolition should be proceeded in a systematic manner as per the approved standard safe operating practices and all work above each tier of any floor beams is completed before the safety of the support of such beam is impaired. Stability of remaining structure after stage wise demolishing should be examined by responsible person before leaving the site.

(vii) Adequate measures should be in place to avoid weakening and collapse/fall of any element/structure/material like masonry, wall, chimney etc.

(viii) Only required workers or other persons essential to the operation of demolition work shall be permitted to enter a demolition zone and the area be provided with substantial barricades for cordoning of sufficient area.

(ix) Barricades and warnings signs should be erected along the periphery of demolition work to prevent unauthorised entry. Warning signs are displayed or erected at conspicuous places of work.

(x) Fully decked safe working platform shall be provided for workers engaged in demolition work and appropriate safe access or egress arrangement should always also be arranged in the course of demolition.

(xi) Material shall not be thrown or dropped from the building. Appropriate means should be adopted to remove debris / bricks and other materials or articles in safe manner without creating any further hazard to work/public. Such arrangement like chutes, material hoist/basket or other similar means should be closed on all sides except at their openings used for receiving or discharging material, of adequate strengths, properly secured with rigid structure.

(xii) All material shall be stored or kept in such a way as it may not endanger the site personnel or not block any access, passageways etc. and suitable barricading shall be ensured to prevent materials from sliding or rebounding into any space used by workers

(xiii) Appropriate PPE's shall be provided to the workers engaged in Demolition work based upon nature of job and risk assessment like protection against noise, dust, vibration, falling objects etc.

(xiv) Hydraulic pile head cutting machines may also be used at site to ensure that pile head are directly handled by machines instead of manual chipping and lifting.

29.0 Transport and Earth moving equipment's

29.1 General Requirement

(i) All vehicles, transport and earth moving equipment should be maintained in good state of repair and are properly used in accordance with standard safe operating practices.

(ii) Truck, trailer, dumper, transit mixer etc. be inspected by Plant & Machine In-charge at least once in a month and report of the same be submitted to Employer. Apart from this, inspection on weekly as well as daily basis should also be conducted by respective site representative.

(iii) All vehicles, transport and earth moving equipment should be fitted with effective brakes, head lights, taillights, horn, reverse alarm, etc. and be maintained in good repair and working order. Adequate arrangement should also be adopted to avoid mechanical damage to such accessories.

(iv) Side stanchions should be fixed on trucks and trailers carrying heavy and long objects like rebar bundle, pile cage, barricade board etc. and also provided with tie chains attached to the top across the loads for preventing such stanchion from spreading out and also be kept in position while loading and unloading.

(v) Trucks, trailer, dumper and other equipment's should not be loaded beyond their safe carrying capacity and be properly covered to avoid road spoiling against fall of material/muck from such vehicles.

(vi) Vehicles should not be used near/or passé underneath of overhead electric line unless until adequate protection measures are implemented like height barrier, fencing, appropriate warning signage's etc. Temporary horizontal barrier should also be installed which restrict the vehicle movement beyond certain point before the OHE line.

(vii) Vehicles shall only be operated by person who is adequately trained and possess skill as are required for safe operation of such vehicles. They should undergo for defensive driving training and hold valid heavy transport vehicle driving license. Operator/driver deployed on vehicle at construction site should be of at least 25 years old and have relevant experience of operating such equipment.

(viii) Helper along with whistle and battery-operated hand baton should be available with each. He should always be remained rear of the vehicle/or near it for assisting in safe reversing or maneuvering at site. He should be properly trained for performing his duties effectively and safely.

(ix) OEM recommendation should be strictly followed for using any vehicles/machine at site especially on gradient/or unstable ground condition.

(x) Vehicle/machine should not be used as means of person transportation unless until specific seating has been provided and also for material transportation for which such vehicle/ machine are not meant.

(xi) Suitable wheel stopper/end stops at sufficient distance from any excavation should be installed as physical barrier to prevent vehicle/machine entry beyond that/certain point. The minimum

distance should be decided based on the type, depth of excavation as well as hazards and relevant standard should be referred. However, at least 2 mtr. gap should be maintained in any cases between front face of machine and excavation.

(xii) Vehicle/machines should not be used on unstable ground condition especially when backfilled/ wet ground condition involving loose soil/backfilling. Before allowing at site, area should be assessed by respective site personnel.

(xiii) When two or more vehicles/machine is operated at same place, a minimum of 10 meter gap between extreme outer parts of each machine should be maintained. Person shall not be deployed at such machine while machines are being operated. Multi-task shall not be allowed in any circumstances when there is a risk of personnel injury.

(xiv) All machines and Vehicles shall be parked at leveled surfaces. However, in case of inescapable parking on slope, appropriate wheel stoppers shall be provided at all four wheels location.

(xv) Tractor having trolley mounted on two-wheel system shall not be used. Tractor with trolley should only be allowed to enter the site premises when their trolley mounted on four wheels or should have proper outrigger at all four corners

(xvi) Attendance of driver/operator arrived at site should be monitored electronically with his ID card/competency certificate and synchronized at all site. In any case, if working hours exceeded the prescribed working time limit, should be reflected by the system and are intimated to concerned site engineer and plant & machine in-charge. In such cases, vehicle should not be allowed at site.

(xvii) Maximum permissible speed limit of any vehicle inside the site premise shall be restricted to 10 km/h and for outside the site premises, the speed limits as prescribed by transport authority shall be followed.

29.2 Machine fitness certificate

29.2.1 All vehicles, transport and earth moving equipment's are certified by Plant and Machine In-charges based on assessment of his condition, documents as well as age limit criteria before inducted at site and upon satisfaction, will issue a fitness certificate.

29.2.2 A static/dynamic QR code should be generated containing the key details of vehicles like make/model, registration/serial no., inspection date etc. Printed & proper laminated code should be pasted on the machine at such location couldn't create any visual hindrance to operator and can easily be scan without disturbing the driver/operator.

29.2.3 Fitness of the machine should be conducted at least once in a period of 06(six) month or after every major maintenance/breakdown excluding any minor service/oil or filter change and be documented properly. Certificate shall be available in operator/driver cabin.

29.2.4 In addition, piling rigs or any other similar machine completely operated on hydraulic system should be inspected once in a 03(three) month by third party testing agencies.

29.3 Operator/driver competency

29.3.1 Plant & Machine In-charge shall issue a 'Operator Competency Certificate' to each & every vehicle driver/operator after ascertaining his qualification, relevant experience for which being deployed, practical as well as theoretical assessment, training, medical examination etc. Certificate should contain the following:

(i) Competency certificate number
(ii) Clear recent photograph
(iii) Age/Date of Birth
(iv) Driving License no. & type
(v) Defensive driving training date
(vi) Medical Examination date
(vii) Certificate issue and expiry date
(viii) Type of vehicle can operate
(ix) QR- code having all details as mentioned on certificate

29.3.2 Certificate should be issued in ID card sized card and all details are pre-printed on it and properly laminated to avoid any tempering.

29.3.3 Driver/operator competency certificate should be valid for 06 (six) months from the issue date.

29.4 Access control

29.4.1 Vehicle/ equipment/machine shall only be operated/drive by authorized driver/operator. Helper or any other person should not be engaged for such work.

29.4.2 Doors of the vehicles/equipment's/machines shall be closed by the driver/operator and ignition key should be handed to the respective site In-charge in-case of leaving the machine or site/or shift change.

29.5 Protective devices/instrument

All vehicles transport and earth moving equipment should be fitted with the following to ensure their safe use at site/outside the site premises:

(i) Reverse camera along with display unit in driver/operator cabin
(ii) Proximity sensors/anti-collision devices with audible warning to alert driver/operator and interlocked with engine ignition to stop it immediately when curtained limited between the vehicle/machine and obstruction arises.
(iii) Rear under-run protection devices and lateral under-run protection devices (a physical hard barrier installed on sides of vehicle having high ground clearance like transit mixed, trailer, trucks, dumper etc.)
(iv) Wheel guards in form of physical barrier.
(v) Auto -alcohol level detector and interlocked with engine ignition whenever permissible limit exceed.

All above devices/instrument should be kept in fully functional condition at all time of work and inspected at least on weekly basis.

29.6 Vehicle/machine/equipment age criteria

Based on various factors like utilization in various site/weather condition, wear & tear, maintenance, change in critical parts, human error, machine handling by different drivers/operators etc., the maximum permissible age for various vehicle/equipment's has been decided by the Employer and contractor shall implement the same. The details regarding maximum permissible age criteria for various vehicle/machine are attached at **Appendix – VIII.**

30.0 Launching Girder & Operation

30.1 As launching operation is one of the critical activities, contractor shall take utmost precaution at all stages like; planning, operation, erection & dismantling, segments launching, pre-stressing and auto launching.

30.2 Contractor shall prepare a comprehensive Method Statement for the launching operation. As the entire process of launching has to be undertaken at an elevated section, the safety of site personnel as well as public is paramount important. Hence, following key requirements shall be provided & adhered throughout the launching operation.

(i) Dedicated qualified and competent responsible engineer (launching engineer) shall be appointed to look after the launching activities. Every onsite activity like erection/dismantling of LG, segment handling & lifting, pre-post stressing, gluing, auto launching etc. should be performed under the direct supervision of launching engineer or qualified & competent engineer as nominated.

(ii) Erection/dismantling, auto launching should be performed only after approval of method statement. After every auto launching the stability of launching girder should be examined by launching engineer and recorded.

(iii) Vertical deflection of launching girder shall be monitored at all critical stages like with/without loads and after every auto launching.

(iv) A register containing all important operational details from erection to dismantling of launching girder should be maintained and made available to Employer.

(v) Complete LG including hoist and Mac-alloy bars, sliders shall be inspected by third party before first time taken in use after erection. LG should also be inspected by launching engineer at least once in a month and documented. Report on bolt torque test should also be maintained and be conducted at least once in a month.

(vi) Counterweights of launcher should be as per designer recommendation and of uniform dimension and be interconnected connected with each other. Any damaged to counterweight or under/oversize should be discarded.

(vii) At gradient, adequate additional measures as per designer's recommendation shall be adopted while auto launching of LG. All supports of LG should be properly locked while lifting.

(viii) Fully decked working platform with guard rail and fall protection arrangements shall be provided on LG at the erection time and maintained throughout the work.

(ix) Proper, appropriate & safe means of access in form of tower staircase or other similar/suitable means shall be arranged for safe ascending / descending of workmen / engineers to or from launchers Such access should be properly secured with rigid structure.

(x) Safe and fully deck working platform duly covered from all side along with safe means of access/egress should be ensured for stressing work at front support. Adequate arrangement should in place for holding stressing jack in their position.

(xi) Provision of lightning arrestor shall be ensured at minimum two locations at each launching girder.

(xii) Adequate earthing shall be provided as per applicable standards while crossing over any existing OHE line/railway line etc. and proper monitoring of earth resistance should be done on daily basis.

(xiii) Inspection checklist for all activities of launching cycle should be prepared and submitted to Employer for review and approval.

(xiv) Adequate arrangement should be in place to ensure the required gauge is maintained between the rails at all time. Standard fish plate shall only be used as rail jointer.

(xv) Extensive documented procedures should be framed and submitted to Employer for review & approval well in advance.

31.0 Electrical systems

31.1 Site electricity requirement assessment

(i) Contractor should assess site wise proposed electric supply load requirement for operating various equipment's as well as lights and should also consider the variable site parameter during the currency of the contract.

(ii) Assessment should elaborate how the total supply is to be obtained/ generated. The details of the source of electricity, earthing requirement, substation / panel boards, distribution system etc. should be prepared and submitted to Employer for review.

(iii) Main contractor should also take consideration the requirements of the sub / petty contractors' electric power supply and arrive at the capacity of main source of power supply. All the norms on installation and maintenance must be adhered.

31.2 Single-line diagram

Contractor shall submit the electrical single-line diagram/schematic diagram of compete site including casting yard/batching plant etc to Employer for review and approval within 04 (four) weeks of time from LOA. Such diagram should include the following as key features:

(i) Electrical panel installations (both permanent & temporary)
(ii) Location of earth pits
(iii) Location of luminaries (both permanent & temporary)
(iv) Cable lying etc.

31.3 Electrical equipment's:

31.3.1 Before installing electrical equipment's at site, it should be ensured that such equipment's confirms the statutory legislations/standards and should be of greater rating compared to proposed load may come in future.

31.3.2 Equipment's should be of sound construction & defects free. It should also be considered that such equipment's be exposed to and should work flawlessly:

(i) Mechanical damage;
(ii) Weather conditions & its effects on equipment;
(iii) Surrounding ground condition
(iv) Flammable or explosive atmosphere/substances

31.3.3 All equipment's deployed at site involving electric supply should confirm to at least IP-44 rating and IP-65 for underground sections. Consolidated details of IP rated panels/equipment's should be submitted to Employer on monthly basis.

31.3.4 Equipment's should be inspected at least once in a month by Electrical In-charge and report of the same be submitted to Employer. After such inspection, if equipment complies to the requirement be pasted with 'Safe for Use' tag else be discontinued from service till it complied.

31.3.5 Equipment's should also be inspected by respective site engineer at least once in a week and recorded.

31.3.6 Equipment should be installed at site in such a way that it cannot create any hazard for site personnel, be readily accessible and be kept above the ground surface on suitable platform and properly secured.

31.3.7 All equipment's should be properly marked for their identification number; warning symbol and details of competent electrician should be pasted over it.

31.3.8 Equipment's should be properly fenced and secured especially high capacity panels, diesel generators, transformer etc. with warning signage's displayed and unauthorized entry shall be prohibited.

31.3.9 Electrical sub distribution boards should be placed as per requirement. However, the details should be mentioned in the register and be updated on regular basis.

31.3.10 Reduced low voltage of 110 volt should be used for lightings and other portable handheld equipment's inside the tunnel.

31.3.11 Diesel generator used at site should confirm to all requirements of statutory legislations/standards and protective devices should be in place. DG sets should be kept over the concrete base or other similar base with adequate weather protection arrangement.

31.3.12 Diesel generator should be of silent type & soundproof and confirming to latest standards of CPCB should only be used. Other arrangement like local diesel engine attached with dynamo shall not be used in any circumstances.

31.3.13 Transformers used at site should be properly fenced and appropriate warning signage's be displayed. Such area should be restricted for unauthorized entry. Details of competent electrician along with emergency contact numbers should also be displayed. Adequate fire prevention & protection measures be in place.

31.3.14 Main contractor may also provide electric supply to other contractors working at the same location on reasonable chargeable basis.

31.4 Cable & other accessories

(i) Cables should be selected after full consideration of the condition to which they will be exposed and load for which being taken. Cables should confirm to national/international requirements for their adequate strength against insulation damages in various environmental conditions.

(ii) Cable for 440 volt and above should be or armored type. Only 3 or more core wire cable should be used at site. No loose wire shall be used in any circumstances.

(iii) It should be ensured that cable colour coding should confirm the national/international standards.

(iv) Cable should not be joined and wrapped with PVC tapes. If required, only standard IP rated coupler is used for cable join. Connection tapping shall also not permit. Wherever cable insulation gets damaged, should be properly insulated by suitable means else be discarded.

(v) Cables when used in any accommodation or office in exposed condition are passed through electrical conduit and properly secured. Cable should not be directly tied-up with barricade board or any other structure. Suitable arrangement like insulated hanger properly attached with barricade or structure be used.

(vi) Cables should be lay overhead at sufficient clearance from ground after considering various machines being used at site or be passes through metal/or similar hard material covering below the surface level to withstand the moving load of heavy machinery.

(vii) Plugs, socket-outlets, and couplers used at site should also confirm to at least IP 44 and IP 65 for tunnels and should confirm the international colour coding system:

(a) 110 volts – Yellow
(b) 240 volts – Blue
(c) 415 volts – Red

31.5 Protective devices

31.5.1 Appropriate protection devices should be fitted with all equipments like electrical panel, DG sets or any other equipment used for generating/supply/ or distributing electrical supply of suitable rating conform to relevant national standards.

31.5.2 ELCBs of sensitivity 30mA/ RCCBs or MCCBs suitable for both overload circuit protection as well as human protection. These devices should be tested by competent electrician at least once a week and properly recorded. All these devices should be kept in fully functional condition.

31.6 Earthing & Earth pits

31.6.1 All electrical equipment's like distribution boards, electrical panels, and DG sets, portable & power tools operated on electrical supply should be properly independently earthed. Equipment's operated on 440 volt or above should be double earthed.

31.6.2 Earthing conductor should be independently connected to the earth pit. Earth loop shall not be made in any circumstances.

31.6.3 Gantry rail, tower crane, mobile crane, barricade board, metal container and any other steel structure like scaffolding, trestle should be properly earthed at regular intervals and directly connected with the earth pit.

31.6.4 Lightening arrestor should be installed on launching girder, tower crane, gantry crane or any other high structure and be properly connected with the earth pit.

31.6.5 Earth conductor of high/ extra high voltage equipment like DG sets, electrical panel, transformer, lightening arrestor should be insulated.

31.6.6 Earth pits should be made at site in regular intervals at least one earth pit on every 100 meter or less based on the requirement. Such pit should be properly covered and marked as earth pit with testing

date and resistance value. Each & every pit should be inspected at least once in a month and recorded.

31.6.7 Rubber mats confirming to relevant standards should be provided with all electrical panels, distribution boards, DG sets etc.

31.7 Work on or near electric conductors/OHE line

31.7.1 Worker should not be deployed to work on or near OHE line or other such electric line unless until adequate measures are implemented and under competent supervision.

31.7.2 Clearance from respective government authorities shall be obtained prior to planning for any activity and procedure should also be submitted to Employer for approval.

31.7.3 Permit to work system should be strictly followed while performing any activity near OHE line. Working area near OHE line should be demarcated and beyond that periphery, machine/worker should not be allowed to approach near OHE line. Appropriate warning signs should be displayed.

31.7.4 Whenever, worker deployed on/or near OHE line, their helmet should be fitted with induction tester to detect the induction range of OHE line and immediately warns the work in form of audible buzzer. This will continuously beep till work remains in induction zone.

31.8 Illumination

31.8.1 Adequate arrangement for site lightening should be done to ensure at all area of site as well as public road/area adjacent to site barricade be properly illuminated and minimum 50 lux should be maintained at any point.

31.8.2 Provision of LED luminaries or any other advance technology luminaries should be used in order to ensure that probability of electrocution is minimized as well as power can be saved with good quality of light.

31.8.3 All permanent lightening fixture should be permanently fixed with ground and arrangement to secure temporary lightening fixtures should also be considered.

31.8.4 Flood as well as fog light should also be used whenever required like during winter season etc.

31.8.5 Contractor should do every effort to illuminate the work site as well as public area adjacent to site at least with minimum required lux. The minimum value of lux to be maintained in different area/works is mentioned in **Appendix – IX.**

31.8.6 Apart from the general light, battery operated emergency light should also be provided at site especially at underground areas like station, tunnel etc.

31.8.7 General lighting of the station/tunnel/viaduct area should be ensured by main civil contract. However, task Lighting shall be ensured by respective contractor to perform their work.

32.0 Hand and Power tools

32.1 Hand tools

(i) All hand tools should be maintained in safe condition without any defects. Before issuing such tools to workers be inspected by issuing person. If worker found using unsafe tools should be repaired or discarded immediately.

(ii) Site supervisor should ensure that right tool is issued to work the intended job. Any makeshift

arrangement should not be done.

32.2 Power tools

(i) A power tool includes equipment operated on electrical, hydraulic or other suitable source of supply. These include number of tools like grinder, cutter, hand saw, drill machine, air compressor, sander, impact wrench etc.

(ii) Tools operated on electric supply should be of insulated type confirm to latest national/international standards and should also be earthed if required. Such tools should be selected for industrial purposes along with their attachments and if required special insulated power supply board may also be made to feed supply to such tools.

(iii) Tools should be properly marked for their identification. Each & every tool should be thoroughly inspected at least once in a week and recorded. Inspection tag should also be issued on fortnightly basis for their 'Safe for Use' else be discarded.

(iv) Tools with proper guard as fitted with it should not be detached in any circumstances and without standard guards should be immediately discarded.

(v) Manufactures recommendation for their safe use and up-keep should be adhered strictly and displayed in Hindi as well as local language.

(vi) Fixed power tools/equipment's like lathe machine, threading machine, re-bar cutting, re-bar bending, helical spring making etc. should strictly be operated as recommended by manufactures and under competent supervision.

(vii) Operator of fixed power tools should be properly trained, and their details be displayed on/or near machine as authorized operator. All tools should be properly, separately double earthed and directly connected to earth through insulated earth conductor.

(viii) Adequate arrangement for dust collected generated during tile/marble/or other material cutting should be in place or alternate arrangement be made.

33.0 Hot Work

33.1 Welding

(i) Welding machines should be inspected by competent responsible person before allowing at site. It should confirm the national/international standards.

(ii) All required parameter/device like current/voltage regulator, VRD, current/voltage indicator, ON-OFF switch, proper lugs terminal etc. should be in good condition.

(iii) Proper colour coding for cable should be adopted and confirm the national/international standards. Welding cable of high standard like copper of requirement capacity should be used and be properly connected with machine.

(iv) The neutral/return path cable should only be connected on the same work piece where work is being performed. Any makeshift arrangement like use of re-bars as return cable shall not be performed.

(v) Welding cable should not be passed through/or any metallic structure, has hose etc. Damaged cable should be discarded.

(vi) Welding machine of advance technology system should be used in view of their high safety standard, light in weight, easy to transport etc.

33.2 Gas cutting sets

(i) Gas cutting sets should be inspected before allowing at site. It should confirm the national/international standards.

(ii) Proper colour coding for gas hose should be adopted and confirm the national/international standards. Hose should be properly connected with regulator/torch. Hose gets damage or showing any sigh of wear & tear should be discarded immediately.

(iii) Cylinders should be fitted with industrial type gas regulator and pressure gauges to monitor/controlling the gas flow rate. Flash back arrestor and Non-return value shall also be fitted.

(iv) LPG cylinder shall not be used at site. Only Acetylene or metal cutting gas should be used.

(v) Cylinders should be kept in secured vertical upright position or in a purpose-built trolley.

34.0 Fire prevention & protection arrangements

(i) Fire points equipped with required number (at least two) of portable first aid fire extinguisher based on fire load assessment should be provided at site. The few locations where dedicated portable fire extinguisher based on type of fire, fire load, equipment/machine be provided:

(a) DG sets
(b) Electrical installation
(c) Transformer area
(d) Launching/retrieval shaft

(ii) Fire points should be inspected on fortnightly basis by Fire Manager and properly documented. Recharging as well as maintenance should also be ensured on routine basis.

(iii) Site personnel, vehicle drivers, operators etc. should be properly trained in use of fire extinguisher.

(iv) Fire hydrant wherever feasible should also be provided along with hose.

(v) Portable fire extinguisher should be kept in all vehicle including lifting appliances and near any hot work being performed.

(vi) Fire emergency mock drill should be done at least once in three months.

(vii) Adequate fire prevention and protection arrangement should be ensured while performing any hot work over the escalator or any other such equipment/flammable substances/material.

(viii) Flammable/combustible material substances like oils, solvent etc. should be kept in closed container and packing material should be removed from site immediately after unpacking of equipment's.

35.0 Overhead protection

i) Adequate arrangement for overhead protections should be ensured/erected along the periphery of every building and other structures which is under construction and where the risk of falling objects from height exists during construction activity.

ii) Overhead protection should be of minimum 2m wide and the outer edge shall be 150mm higher than the inner edge and an angle not more than 20^0 to its horizontal sloping into the building.

iii) Areas of inadvertent hazard of falling of material shall be guarded or barricaded or roped-off thereby.

iv) Design/drawing of overhead protection should be submitted to Employer for review and approval.

36.0 Slipping, Tripping, Cutting, Drowning and falling hazards

(i) All places like passageways, working platforms and other places of construction should be free from accumulation of dust, debris or other materials and from obstructions that may lead to slip/trip.

(ii) Sharp projections or any protruding nails or similar objects which may cause any cutting hazards should be removed or made safe by taking suitable measures.

(iii) Worker should not be allowed to work or use platforms, scaffolds/passageways or walkways or any other elevated working surface which is slippery and in dangerous condition and ensure that water, grease or oil or similar substances, which may render surface slippery, be removed or sanded, saw dusted to make it safe from slip hazard.

(iv) When workers are exposed to areas where fall into water is possible, the contractor should provide suitable and adequate equipment for saving the workers from drowning and rescuing from such hazard. Well-equipped boat or launch manned with trained personnel should also be provided at workplace whenever condition exists.

(v) Every open side or opening through which worker, material, equipment, vehicle or lifting appliance may fall at a building or outside shall be guarded suitably to prevent such fall except in places where free access is necessary by reasons of nature of work.

(vi) Adequate and suitable safety net shall be provided at places wherever there is a chance of falling of any material, equipment or person. Such safety nets should be in accordance with national/international standards.

(vii) When workers are exposed to hazards of falling from height, be provided with adequate equipment or means like double lanyard with shock absorber, retractable type full body safety harness shall be provided where worker's movement is within defined distance. Lifeline of adequate strength for saving them from such hazards. Lifeline of steel wire rope only to be used for lifeline purposes. Such equipment's shall be in accordance with national/international standards.

(viii) Adequate arrangement should be in place to ensure that pier & station column reinforcement should be secured from the risk of tilting/falling. Reinforcement may also be anchored with concrete block of sufficient capacity through at least four wire rope in form of guy rope.

37.0 Machine and general area guarding

All motors, cogwheels, chains and friction gearing, flywheels, shafting, dangerous and moving parts of machinery should be properly guarded based on hazards. Machine fitted with standards guards should not be removed and whenever guards misplaced/damaged, should be purchased from manufacturer or similar arrangement to provide before utilizing machine/system. Such guards/fence should not be removed while machine is in motion.

38.0 Manual material handling

38.1 Worker should not be engaged for material lifting by hand or carries overhead or over his back or shoulders any material, tool or appliances exceeding in weight as mentioned below unless aided by another worker or device.

Person	Maximum weight in kg.
Adult man	55
Adult woman	30

38.2 Every effort should be taken to avoid manual material handling as much as possible and mechanical aid s should be used wherever possible to ease manual lift like reducing the lift height as well as bending movement by provision of intermediate resting platform for material, fabricated material shifting arrangement supported by two workers as keep load as low as possible etc.

38.3 Long material like rebar bundle, pipe etc should be handled by multiple workers at intermediate levels along with supporting shoulder pad etc.

39.0 Dangerous and harmful environment

(i) Adequate arrangement should be in place to avoid generation, accumulation, spreading of dangerous and harmful dust, fumes/vapors or any other which may affect health condition. Arrangement includes:

(a) Regular disposing of dangerous/harmful chemicals from site premises or be kept in a closed container for a limited time period.
(b) Use of chemical/gases in a controlled environment
(c) Avoiding spillage of chemicals/liquid and prompt action for their containment
(d) Controlled on dust generation by wetting it down
(e) Provision of ventilation control system etc.

(ii) Area especially underground station, tunnel, emergency shaft etc. should be continuously monitored through appropriate equipment's and action should be taken immediately on detection of any change in atmospheric condition*. Kindly refer excavation & tunneling section for detailed requirement.*

40.0 Corrosive Substances

40.1 Corrosive substances including alkalis and acids should be stored and used by a person dealing with such substances in a manner that it does not endanger the site personnel and suitable PPE are provided to the worker during such handling and work. Adequate arrangement like shower/eye wash, chemical cleaning kit etc. should be in place to for use by worker as well as dealing with emergency in case of spillage.

40.2 MSDS containing keys measures to be ensured while its utilization/handling/storage at site along with emergency action points shall be posted at storage as well as usage area.

41.0 Permit to Work system

41.1 Some specific activities involving high risk should be conducted through permit to work system. Prior to start to work, permit should be taken. Examples of high-risk activities include but are not limited to:

(i) Hot work permit – welding, cutting, brazing and any other activities involving heat/flame generation etc.
(ii) Electrical work permit – work in proximity of OHE line/work on electrical system etc.
(iii) Confined space work permit – to work in any confined space
(iv) Lifting permit – lifting of any object/material weighing more than 1 ton
(v) Radiation work permit – work involving any exposure to radiation like water pipeline radiography/ultrasonic testing
(vi) Explosive work permit – activity involving use of explosive

41.2 Sample format of work permit will be provided by the Employer and same be implemented.

41.3 Permit should be issued by respective site in-charge only. Lifting permit should be authorized by lifting engineer. However, clearance from safety section should also be obtained prior to start of work.

41.4 Permit should be issued for a particular work with a maximum time frame of 12 hrs/ or a shift. In case, work cannot be completed within stipulated time frame and must be continued to next shift, should be extended till completion of work or maximum next 12 hrs.

41.5 Permit should be displayed near work location in protected manner.

41.6 Hot work above the escalator or other combustible material should be performed in presence of representative of both contractors and permit is jointly signed by civil contractor site in-charge and other contractor site in-charge of which material belongs. Adequate fire prevention and protection arrangement mutually agreed by both contractors should be done prior to start of work. Escalators or other combustible material should be covered with fire retardant blanket/covers

42.0 Piling Operation

42.1 General provisions

(i) Pile driving equipment/machine should be of good design and sound construction considering the ergonomic principles and properly maintained.

(ii) Pile driver should be used on firm/ uniform & well compacted hard ground surface capable of taking the pile machine load along with dynamic load.

(iii) Necessary precaution should be adopted while using machine in close proximity of OHE line. Proposal should be submitted to Employer for review and approval prior to mobilization of machine and start of work.

(iv) Adequate measure should be adopted to avoid overturning of pile driver. Augur should be properly attached with key and standard lock pins be used.

(v) Pile driver should be used in presence of competent supervision and pile drive be inspected by operator prior to start of work.

(vi) Standard safe work procedure should be strictly followed and ensured by supervisor. Operator should be adequately trained through OEM in safe operation of pile driver.

(vii) Piling areas where pile driver is in use are effectively cordoned off to prevent entry of unauthorized persons. Bored pile should not be left unprotected in any circumstances. Whenever, piling completed bored pile is covered and secured. Operator cabin from front side should be properly protected through mesh grill.

(viii) Worker should not be allowed to stand near open bore pile unless until required and all safety measures including use of PPE are adhered.

42.2 Stability of adjacent structure

During piling, if any issue of stability of adjacent/adjoining area to be piled exists, such structure should be properly supported by suitable means like underpinning, sheet piling, shoring, bracing to ensure safety and stability of such structure and to prevent injury to any person.

42.3 Inspection and maintenance

(i) Pile driving equipment should not be taken into use until it has been inspected by operator and found to be safe.
(ii) Pile driver should be inspected at least once in a week by piling engineer.
(iii) All hydraulic hose, air hose, pulley blocks, guide rails, locking pins, connections etc., should be inspected by respective site piling engineer/in-charge.
(iv) Pile driver along with all attachment should be kept in good working condition.
(v) Machine fitness certificate should be issued by plant & machine in-charge. Kindly refer transport and earth moving equipment section.

42.4 Operation of pile driving equipment

(i) Experienced and trained operator should be deployed to operate pile driver along with trained workforce for such operation.
(ii) When a pile driver is not in use, augur of such pile driver should be blocked at the bottom of the heads of such pile driver.
(iii) Pile cage should not be dragged for lowering in bore pile.

42.5 Pile testing

(i) Pile testing should be conducted under the competent supervision.
(ii) Adequate measures like displaying warning signage, barricading the area and other similar measures should be taken to protect the pile testing area.
(iii) Entry to pile testing area should be restricted except authorized personnel.
(iv) Load used for pile testing should be kept in properly uniform condition and completely secured to avoid any possibility of load toppling. In view of the stability of load, use of concrete block should be avoided as much as possible.
(v) Testing procedure should be submitted to Employer for review and approval.

43.0 Explosive & Blasting

43.1 Contractor should prepare and submit the procedure for handling, storing as well as use of explosive along with blasting procedure to Employer for review & approval well in advance along with permission from concerned authority.

43.2 Explosive should be handled, used or stored in accordance e with the instructions of concerned authority and its MSDS supplied by the manufacturer of such explosive.

43.3 Explosive shall only be used at site in accordance with safety measures requirements of concerned authority/licenser.

43.4 Prior of using explosive at site, necessary warning and danger signals should be displayed, at conspicuous places to pre-warn workers as well as general public.

43.5 Smoking, use of naked lights/flames and other sources of ignition should not be kept in the vicinity where explosive is handled, stored and used. Only non-sparking tools should be used while opening packages containing explosive.

43.6 Explosive should not be used if local weather conditions are not suitable for such use or handling.

43.7 Adequate measures should be in place to avoid fly-off of stone/sand/or other particle during blasting. Blast hole should be properly covered with heavy load over it to avoid such situations.

43.8 Blasting shall only be done by authorized blaster.

43.9 Additional measures for safe use, handling, storing or transportation of explosive should be done in accordance with Explosive Act, 1884 with term & conditions issued by licenser.

44.0 Pressure plant and equipment's

44.1 Pressure plants and equipment should be examined and tested by plant & machine in-charge at least once in a month. The report of the same is submitted to Employer. These should also be inspected by respective site engineer at least once in a week. Inspection tag should also be pasted when complied with the requirement and fit for use at site.

44.2 In additional, pressure plant and equipment's shall be thoroughly examined and tested by the third party (competent person approved by respective state government) empaneled by Employer before being taken in used and during service:

(i) Externally, one in very period of six months;
(ii) Internally, once in every period of twelve months and;
(iii) Hydraulic test, once in every period of four years

44.3 Required safety devices/instruments like safety valve to provide maximum safe discharge pressure from being exceeded, pressure gauge with dial range not less than 0.5 times and not exceedingly twice the maximum working pressure, stop valve should be provided and maintained din fully functional condition.

44.4 Compressor mounted on tractor-trolley shall not be used at site. Only standard safety compliant mobile compressor be used confirming to relevant statutory legislations/standards shall be used.

44.5 Utmost care should be ensured while using such pressure system at site especially hoses connection in both cases whether operate don air or hydraulic system. Additional measure should also be adopted to secure all hose against incident leakage and fly-off in case of connection failure.

44.6 Hose should not be disconnected in any circumstances while system is in pressurized condition.

45.0 Traffic Management

45.1 Contractor should prepare a standard safe operating procedure for traffic management at site and submitted to Employer for review and approval. The SOP should include traffic management/diversion plan in various scenarios and should be made for both cases i.e temporary as well as permanent.

45.2 Traffic diversion/management plan should be made in consultation of local traffic police and their prior consent should be obtained. While preparing plan, national guidelines on traffic management in work

zones (IRC SP-55) should be followed and accordingly arrangement be made based on site requirement.

45.3 Traffic behavior as well as volume should be assessed in various time frame and accordingly measures deployed.

45.4 Regulatory as well as warning signs boards should be displayed at conspicuous location to warn road users Informatory sign boards should also be displayed. All sign boards should be made in Hindi as well as local language understood by majority of public/workforce.

45.5 Key factors to be considered while preparing Traffic Management Plans:

(i) Provision of safety for road users and workers
(ii) Minimise hindrance or delay to road users
(iii) Provision of clear and positive guidance to road users
(iv) Road site safety maintenance
(v) Maintain good public relation
(vi) Traffic movement and road user behavior
(vii) Suitability of traffic control devices etc.

45.6 Temporary traffic control zones

Various elements of traffic control zone which required to be maintained at site include:

(i) Advance warning zone - It is the area to warn the road users of the approaching hazard and to prepare them for the change in driving conditions.

(ii) Approach transition zone - It is the section where road users are redirected from their normal path, where the regular traffic is guided to deviate from their normal path of travel through this zone.

(iii) Activity zone - It is the section where construction activity takes place. It comprises the wok space, the traffic space, and the buffer space.

(iv) Terminal transition zone - It is the area where the traffic will be redirected from the deviated path to their normal path through the transition zone, which also can be achieved through tapering or through circular curves.

(v) Work zone end zone - It is the area which is extended from the end of terminal taper length to the last traffic control devices such as sign showing the end of road work.

45.7 Traffic control devices

Various traffic control devices such as signs, signals, flashers, delineators, marking, barriers and other device used to regulate, warn, or guide road users, and normally placed on, over, or adjacent to a road, pedestrian facility for managing the traffic operations efficiently and safely in the work zones should be deployment/fixed. These are broadly divided in three broad categories:

(i) Road Signs

The signs board conveying both general as well as specific messages by means of works or symbols should be displayed in retro-reflective forms for their clear visibility in dark hours also. These include regulatory, warning as well as informatory signs.

(ii) Channelizing devices

Channelizing devices are used to warn and channelize the movement of road users through changed path of movement due to the conditions created by work activities in or near the roadway. These include cones, tubular markers, vertical panels, drums, barricades, pavement markings and road studs and any other as seems suitable for respective site condition.

(a) **Traffic cones** - these may be of the height of 500 mm, 750 mm and 1000 mm and of 300 to 500 mm in diameter or in a square shape and made of material that can be struck without causing damage to the impacting vehicle. For dark hours, cone should be of retro-reflective or equipped with lighting devices for maximum visibility. These can be used along with concrete crash barriers

(b) **Tubular markers** – These should be erected for effectively divide opposing lanes of road users, or to divide vehicular traffic lanes when two or more lanes of moving vehicular traffic are kept open in the same direction, and to delineate the edge of a pavement drop-off where space limitations do not allow the use of larger devices. These should be flexible plastic bollards.

(c) **Hazard markers** – the hazard markers should be alternately yellow and black retro-reflective strips, sloping downward at an angle of 45 degrees in the direction of vehicular traffic.

(d) **Drums** – these should be lightweight and of deformable material having size ranging from 800 mm to 1000 mm high and should be at least a 300 mm width regardless of orientation. These drums should be highly visible and give the appearance of being formidable obstacles.

(e) **Barricades** – barricades are intended to provide containment without significant deflection or deformation under impact and to redirect errant vehicles along the barrier. They should be designed to be easily relocated and have four specific functions:

a. Prevent traffic from entering work areas including excavations or material storage sites;
b. Provide protection and perceived safety to both traffic as well as construction workers;
c. Separate two-way traffic; and
d. Protect construction, such as form work for culverts and other exposed objects, to avoid hazard to road users

Following are the key requirements which need to be adopted at site regarding barricading:

a. Full height fence, barriers, barricades shall be erected around the site in order to prevent the working area risk free due to traffic movement.

b. The structure dimension of the barricade, material and composition (metal as well as reinforcement fiber plastic), its colour scheme, Employer & contractor logo and other details shall be in accordance with specifications laid down in tender document.

c. Barricade should be properly fixed with the ground with suitable means like proper nailing at all four corners of the base of barricade. Portable barricade

should be stable under adverse weather conditions and appears substantial but not so much as to cause excessive damaged to the vehicle, if they are struck. Verticality of the barricade should always be maintained.

d. All barricades shall be conspicuously seen in the dark/night time by the road users so that no vehicle hits the barricade. Retro-reflective hazard marking strips of required size and shape should be fitted/ or painted at appropriate angle i.e 45 degree at the bottom and top portion of the barricade. On ever barricade retro-reflective traffic movement direction indicator should be painted or pasted in such a way that can be visible to small as well as heavy vehicle drivers

e. On top edge of every barricade board, at least one solar operated blinker should be attached and maintained in fully functional condition. If required, LED rope light may also be attached in addition to blinkers

f. Retro-reflective direction indicator barricade should also be erected at the initial starting point of work zone.

g. Barricade should be maintained in good condition and be repainted whenever, colour gets fade. Damaged barricade either repaired or replaced immediately. Mechanized system may also be used for routine board cleaning.

h. Barricade should be fabricated in such a way that rusting at bottom portion of the barricade should be minimized. Sheet should be attached/fixed in adequate manner so that they cannot be dislodged and create any hazard to road users.

i. Provision of well illuminated height barriers shall be ensured before entrance of the station and other under construction structures above the live road to avoid unauthorised entrance of over dimension public vehicle which may endanger safety of structure. The height barrier shall be designed to withstand maximum anticipated impact and be submitted to Employer prior to its erection at site.

j. Truck mounted attenuator should be used whenever any maintenance is carried out on barricade board on live road to protect workers or as a trailing vehicle during movement of slow site vehicle shall be fabricated on a Four Wheeled Light Commercial Vehicle (LCV) chassis of minimum payload capacity of one ton should be well illuminated along with arrangement for impact resistance.

(f) **New Jersey barriers/ concrete crash barriers** – these are pre-cast reinforced concrete modular pieces with shaped ends that can be interlocked and connected. These should be used where the road works are to be undertaken which would continue for some time or where the space is limited and there is a need for the protection of work force, particularly where the speed of passing traffic may be high.

(g) **Water-filled barricades** – these modular water-filled plastic containers of various sizes and shape used where short-term work is conducted. These can also be filled with soil/sand, or concrete to produce a heavier barrier with greater crash protection. However, loose soil/sand or other loose material may also lead hazard to public by fly-off particles. Hence, due care be taken to use filling media.

(h) **Delineators** – These are combined with or used to supplement other traffic control devices and mounted on crash worthy supports so that the reflecting unit is approximately 1.2 m above the nearside carriageway edge. These are used to indicate the alignment of the roadway and to outline the required vehicle path through the work zone.

(i) **Temporary pavement marking and road studs** – Pavement marking should be maintained along the paved road in all long and intermediate term stationary zones. Pavement marking should be reinforced with road studs and the color of the road studs should be amber. Road studs should also be used prior to start of site barricading to warn road users well in advance as well as alert them. These may also be used across the road for assisting in pedestrian crossing.

(iii) Lighting devices & variable message signs

Lighting devices shall be provided at site which were used to supplement the channelization, the maximum spacing for warning lights should be identical to the channelizing device spacing requirement. Hence, arrangement/area should be properly asses before deployment of such devices.

(a) **Flood lights** – these lights shall be used to illuminate the work area, equipment crossing, and other areas. The adequacy of the floodlight placement as well as elimination of potential glare should be determined by driving through and observing the floodlighted area from each direction on all approaching roadways after the initial floodlight setup, at night. At least 50 lux should be maintained for general activities.

(b) **Flashing warning beacons** – flashing warning beacon shall be a flashing yellow light with a minimum nominal diameter of 200 mm with rotating amber lights equipped with operated over the entire 24 hours duration. These should also be provided at the initial starting point as well as in advance to warn road users

(c) **Warning lights** - these are portable, powered, yellow, lense-directed, enclosed lights. These are mounted on signs or channelizing devices.

(d) Temporary traffic control signals shall be used to control road user movements through work zones and in other work zone situations. These may be portable or mounted on temporarily fixed supports.

(e) Portable LED type variable message boards/arrow signs boards/diversion boards etc. should also be used especially at the initial barricading/work starting zone as well as road crossing.

45.8 Adequate arrangement should be done to ensure that safe and adequate pedestrian walkway/footpath is available at all time for pedestrians. If required overhead protection should also be done and well as handrail should also be provided to separate pedestrian walkway from live road/work site.

45.9 Adequate arrangement like speeds breakers, rod studs, raise rumble strips using thermo plastic paint or mastic sheets can be used with installation across the carriageway for deliberate reduction of vehicle speed.

46.0 Personal Protective Equipment's

46.1 Contractor shall provide required PPEs meeting the high standard/quality to their employee/workmen to protect them from hazards. The key PPEs to be used at site are:

(i) Head Protection (Safety helmets)
(ii) Foot Protection (Safety footwear, Gumboot, etc)
(iii) Body Protection (High visibility clothing, Apron, shoulder pads etc)
(iv) Personal fall protection (Full body harness, fall arrester, etc)
(v) Eye Protection (Goggles, Welders face shield, glasses, etc)

(vi) Hand Protection (Gloves etc)
(vii) Respiratory Protection. (Nose mask, SCBAs, Self-rescuers for TBM workers etc)
(viii) Hearing Protection (Ear plugs, Earmuffs, etc)

In addition, based on site requirements/working conditions, additional PPEs should also be provided to workers/person involve in those particular activities like hot work etc. Arrangement like trouser restrainer for avoiding entanglement of loose clothing especially trouser should be used.

46.2 PPEs issued at site should confirm the national/international standards and be inspected regularly. Any substandard or damaged PPE should be discarded.

46.3 Sufficient stock of PPEs should always be kept as surplus which is at least 10% of total work force. At each site, PPEs for visitors should always be kept in stock.

46.4 Any person working at site or visitor should use mandatory PPEs: Safety helmet, Safety footwear and high visibility vest.

46.5 Color coding for safety helmets:

Safety Helmet Colour Code (Every Helmet should have the LOGO* affixed /painted)	**Person to use**
White	Employer/visitors
Grey	All Designers, Architect, Consultants, etc.
Violet	Main Contractors (Engineers / Supervisors)
Blue	All Sub-contractors (Engineers / Supervisors)
Red	Electrical Staff (Both Contractor and Sub-contractor)
Green	Safety Professionals (Both Contractor and Sub-contractor)
Orange	Security Guards / Traffic marshals
Yellow	All workmen
White (with "VISITOR" sticker)	Visitors including trainee/interns

Note: LOGO*

(i) Logo shall have its outer dimension 2"X2" and shall be conspicuous
(ii) Logo shall be either painted or affixed
(iii) No words shall come either on Top / Bottom of Logo

47.0 Work adjacent to Railways

(i) Work near/adjacent to any railway line should be performed in consultation to respective authority and subsequent prior permission if required.

(ii) Safety provision as framed by the respective authority should be strictly followed for safety of worker as well as their own system. Kindly refer guidelines as framed by Ministry of Railways on ***"Safety Precautions at Worksite Adjacent to Track"****, issued in September 2015* and shall be strictly followed at site while executing work along/near the railways. Similarly, guidelines as required by DMRC & others should also be followed, if work is being performed in proximity of existing metro lines.

(iii) Works which is executed within 3.5 mtr from center line of existing railway/metro/or other similar track should be executed under block protection and with permit to work from concerned authority and for works to be executed between 3.5 mtr to 6 mtr from center line of existing railway/metro/or other similar track work to be executed after erection of fencing as per approved plan.

(iv) For works to be executed beyond 6 mtr. from center line of existing railway/metro/or other similar track, it should be ensured that no vehicle / construction equipment infringes demarcation line marked at 3.5 mtr. from center of existing track.

(v) Any material unloaded along the track should be kept clear of moving dimensions and stacked at minimum 3.5 mtr. from track center of running track.

(vi) Movement of vehicle / working of machineries should not be permitted during night hours and in case night working is necessitates, same should be performed after adopting proper safety measures like fencing at 3.5 mtr. from track center of running track to ensure that no infringement of moving dimension takes place. Suitable lighting arrangements should also be done.

48.0 Visitors at site

(i) Visitor should not be allowed to enter the site without the prior permission of Employer.

(ii) Visitor should undergo a basic safety induction prior to their entry at site and properly recorded. The inducted sheet should be signed by visitors certifying that he has understood the safety requirements and should comply/ensure the same while site visiting.

(iii) Safety instruction/do & don'ts should also be issued to visitor. Mandatory PPEs should be used by them. Visitor's record should be maintained at site.

(iv) Visitors, Trainee/interns should always be accompanying by responsible site personnel. Contractor shall be fully responsible for all visitors' safety and health within the site.

49.0 Batching plant/Casting yard

(i) The batching plant / casting yard should be effectively planned for smooth flow of unloading and stacking the aggregates, reinforcements and cement, batching plant, transport of concrete, casting the segment, stacking the segment and loading the segments to the trucks.

(ii) The layout for setup of various utilities/building/services/fabrication area etc. along with approach road should be submitted to Employer for review and approval.

(iii) The batching plant / casting yard should be barricaded all around. Each area inside the plant should be clearly separated from each other through proper demarcation/physical barriers

(iv) Electrical system should be suitably planned so that location of diesel generator, if any, location of DBs, routing of cables and positioning of area lighting poles/masts does not infringe on any other utility and pose danger.

(v) Batching plant/concrete plant along with its auxiliary units like conveyor belt, aggregate feeding bucket etc. should be interlocked and be tested by responsible person at least once in a month. It should be properly fenced from all around especially conveyor as well as aggregate feeder.

(vi) Drainage should be effectively provided and wastewater is disposed after its proper treatment.

(vii) Time office, canteen, drinking water, toilet and rest place shall be suitably located for the easy access to workers. All facilities shall be properly cleaned and maintained during the entire period of operation.

(viii) Manual handling of cement should be avoided to a larger extent. Whenever it is necessary, the workmen should be given full body protection, hand protection and respiratory protection as a basic measure of ensuring their better health.

(ix) Access roads and internal circulation roads shall be well laid and maintained properly at all time.

Part – III: Occupational Health & Welfare

50.0 Medical Facilities

50.1 Medical examination of staff/workers

50.1.1 Every staff/worker on project should be medially examined before his/her deployment at site and in regular interval as decided by the statutory authorities. Pre-Medical examination as well as post-medical examination should be conducted. For post-medical examination, person should be medically examined once in a period of 02 years upto 40 years of age and once in a year thereafter.

50.1.2 Medical examination should be conducted by certified medical officer or in hospital as empaneled by contractor based on the type of examination required.

50.1.3 Categorization of medical examination based on the job profile, site condition etc. should be done.

50.1.4 The record of the medical examination is maintained and should be submitted to Employer on periodic basis.

50.1.5 Parameters to be considered in medical examination:

(i) General physique
(ii) Blood group
(iii) Vision
(iv) Hearing
(v) Breathing
(vi) Upper limbs function
(vii) Lower limbs function
(viii) Mental alertness
(ix) Height phobia
(x) Any other test which the examining doctor considers necessary.

50.1.6 Based on final medical examination, person should be suggested for type of activity he can perform.

50.2 Duties of construction medical officer

Construction medical officer should perform the following at site:

(i) medical examination of building workers;
(ii) first-aid care including emergency medical treatment;
(iii) notification of occupational diseases
(iv) immunisation services;
(v) medical record, upkeep and maintenance;
(vi) health education including advisory services on family planning, personal hygiene, environmental sanitation and safety;
(vii) regular site inspection in view of determining any health issue or occurrence of occupational disease;
(viii) advisory guidelines on various health issues;
(ix) regular coordination with hospital in case person injured an admitted;
(x) Referral services, if required etc.

50.3 Occupational health centre

An occupational health centre, mobile or static shall be constructed and maintained in good hygienic condition. Services and facilities to be provided in health centre should be in accordance with schedule X of central BOCWR. Construction medical officer appointed in an occupational health centre should possess the qualification as laid down in schedule XI of central BOCWR. One construction medical officer along with assistant/male nurse should be engaged in both day and night shift.

50.4 Ambulance room & van as well

(i) An ambulance room with effective communication system should be provided at each site and is in the charge of a qualified nurse and services of ambulance room should be available to all people at site.

(ii) Contractor shall mobilized at least one ambulance van at site and be equipped with advance lifesaving arrangement. Adequate arrangement shall also be done with nearby hospital for providing ambulance equipped with advance lifesaving arrangement/medical assistance promptly at site. Ambulance shall be stationed at site where critical work is going on.

(iii) Contractor shall make a Tie-up with nearby super/multi-speciality hospital and such hospital should have the following facilities:
  (a) well-equipped ICU
  (b) Radiology facilities – CT scan, Ultrasound, X-ray etc. on 24 hrs basis
  (c) Permanent neurology department
  (d) Emergency department with multi-department doctors

50.5 Stretchers

Sufficient numbers of stretchers should be provided at various locations in the site premises like launching shaft, inside tunnel, concourse level, platform level, casting yard etc. and to be readily available in an emergency.

50.6 First-aid boxes

Contractor shall ensure that one first-aid box for 100 workers provided and maintained in good hygienic condition for use. Every First-aid box is distinctly marked "First-aid" and is equipped with the articles specified in schedule III of central BOCWR. Adequate number of trained first aid person should be available at each work site in each shift. First-aid box should be provided at all prominent locations like launching shaft, inside tunnel, concourse level, platform level, casting yard etc. and to be readily available.

50.7 Emergency care services or treatment

50.7.1 Contractor should ensure that essential life-saving aids and appliances are provided and properly maintained to handle:

(i) head injuries and spinal injuries;
(ii) bleeding;
(iii) fractures and dislocations of bones and joints;
(iv) crush injuries;
(v) shock, including electric shock;
(vi) dehydration due to any cause;
(vii) snake bite, insect bite, scorpion and bee stings;
(viii) burns, including chemical burn;
(ix) bends or diver's paralysis;
(x) other surgical and gynecological, obstetric or pediatric emergencies;

(xi) drowning;
(xii) sunstroke and frost bite,

50.8 HIV/AIDs prevention & control

(i) The contractor should form a policy on 'HIV / AIDS Prevention and Control' for workmen engaged by them. Employer policy may also be used a reference.

(ii) Adequate arrangement should be ensured for proper education and awareness among worker and guideline on the same should be issued. External professional agencies may also be engaged for implementing the guidelines as laid down by relevant authorities

50.9 Prevention of mosquito breeding

(i) Adequate measures should be implemented to avoid water stagnation inside/outside the site premises as well as all waste material should be disposed off.
(ii) Empty cans, oil drums, packing and other receptacles, which may retain water should be collected at central location and disposed off regularly.
(iii) Still waters should be treated at least once every week with kerosene or other suitable material to prevent mosquito breeding.
(iv) Contractor's equipment and other items on the site, which may retain water, shall be stored, covered or treated in such a manner that water could not be retained,
(v) Contractor at periodic interval shall arrange to prevent mosquito breeding by fumigation / spraying of insecticides. Most effective insecticides shall include SOLFAC WP 10 or Baytex, The Ideal Larvicide etc. Contractor may also purchase suitable in-house machine for the same.
(vi) Awareness information regarding mosquito breeding & its danger effects on health should also communicated through suitable means like posters in both Hindi and local language.

50.10 Alcohol & drugs

(i) Alcohol and other prohibited drug consumption at site are strictly prohibited and contractor should implement the measure for ensuring the same. Breath analyzer for detecting alcohol content should be procured at frequently is used at site.

(ii) Smoking at work site shall be strictly prohibited.

51.0 Noise

51.1 The contractor should consider noise as an environmental constraint in his design, planning and execution of the works and provide demonstrable evidence of the same on Employer's request. The contractor shall take measures to ensure that work carried out at site, whether on or off the site, will not cause any unnecessary or excessive noise which may disturb the occupants/general public of nearby dwellings, schools, hospitals, or premises with similar sensitivity to noise.

51.2 Without prejudice to the generality of the foregoing, noise level reduction measures shall include the following:

(i) It shall be ensuring that all powered mechanical equipment used at site be effectively sound reduced using the most modern techniques available including but not limited to silencers and mufflers
(ii) Contractor shall construct acoustic screens or enclosures around any parts of the works from which excessive noise may be generated.

51.3 The Contractor shall ensure that noise generated by work carried out during day and nighttime shall not exceed the maximum permissible noise limits, whether continuously or intermittently. The same may be

varied from time to time by and at the sole discretion of the Employer. In the event of a breach of this requirement, the contractor shall immediately re-deploy or adjust the relevant equipment or take other appropriate measures to reduce the noise levels and thereafter maintain them at levels which do not exceed the said limits. Such measures may include without limitation the temporary or permanent cessation of use of certain items of equipment.

51.4 Control Requirements

51.4.1 Construction material should be operated and transported in such a manner as not to create unnecessary noise as outlined below:

(i) Perform work within the procedures outlined herein and comply with applicable codes, regulations, and standards established by the Central and State Government and their agencies.

(ii) Keep noise to the lowest reasonably practicable level. Appropriate measures will be taken to ensure that construction works will not cause any unnecessary or excessive noise, which may disturb the occupants of any nearby dwellings, schools, hospitals, or premises with similar sensitivity to noise. Use equipment with effective noise-suppression devices and employ other noise control measures as to protect the public.

(iii) Schedule and conduct operations in a manner that will minimize, to the greatest extent feasible, the disturbance to the public in areas adjacent to the construction activities and to occupants of buildings in the vicinity of the construction activities.

(iv) The Contractor shall submit Noise Monitoring and Control Plan (NMCP) under contract specific site environmental plan to Employer for review and approval. It shall include full and comprehensive details of all powered mechanical equipment, which he proposes to use during daytime and night-time and of his proposed working methods and noise level reduction measures. The NMCP shall include detailed noise calculations and vibration levels to demonstrate the anticipated noise generation and vibrations by the Contractor.

(v) The NMCP prepared by the Contractor shall guide the implementation of construction activity. The NMCP will be reviewed on a regular basis and updated as necessary to assure that current construction activities are addressed. It may appear as a regular agenda item in project coordination meetings, if noise is an issue at any location in the contract.

51.5 Occupational Noise

(i) Protection against the effects of occupational noise exposure should be provided when the sound levels exceeds the threshold values.

(ii) When employees are subjected to sound levels exceeding the prescribed limited as specified, feasible administrative or engineering controls should be utilized. If such controls fail to reduce sound levels, personal protective equipment shall be provided and used to reduce sound levels effects.

(iii) Exposure beyond maximum noise level exposure i.e 115 db shall not be allowed even for a shorter period.

(iv) When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. Exposure to different levels for various periods of time shall be computed according to the formula and sample computation.

52.0 Vibration

In locations where the alignment is close to historical / heritage structures, the contractor shall prepare a monitoring scheme prior to construction at such locations. This scheme for monitoring vibration level at such historical / heritage sites shall be submitted to Employer for approval. This scheme shall include:

(i) Monitoring requirements for vibrations at regular intervals throughout the construction period.
(ii) Pre-construction structural integrity inspections of historic and sensitive structures in project activity.
(iii) Information dissemination about the construction method, probable effects, quality control measures and precautions to be used.
(iv) The vibration level limits at work sites adjacent to the alignment shall conform to the permitted values of peak p velocity.

53.0 Ventilation & Radiation:

53.1 Ventilation:

(i) The contractor shall ensure at a construction site of a building or other construction work that all working areas in a tunnel as well as underground station and other allied areas are provided with ventilation system as approved by the DG/CIIBC and the fresh air supply in such tunnel is not less than $6m^3$/min for each worker employed underground in such tunnel and station. The free air flow movement inside tunnel should not be less than 9m/min.

(ii) The oxygen level shall not be less than 19.5% in the any working environment else adequate measures to keep the level in safe range or be evacuated.

53.2 Radiation

(i) The use of radioactive substances and radiating apparatus shall comply with the Govt. regulatory requirements and all subsidiary legislation

(ii) Operations involving ionizing radiation shall only be carried out after having been reviewed without objection by the Employer's and be carried out in accordance with a approved method statement.

(iii) Each area containing irradiated apparatus shall have warning notices and barriers, as required by the Regulations, conspicuously posted at or near the area.

(iv) Radioactive substances will be stored, used or disposed shall be strictly in accordance with the Govt. enactments.

(v) The contractor shall ensure that all site personnel and members of the public are not exposed to radiation.

54.0 Welfare provisions/amenities

54.1 Canteen

In every workplace wherein not less than 100 workers are ordinarily employed the contractor shall provide a canteen conforming to section 42 of Contract Labour (R & A) Rules. The charges for food stuff shall be based on 'no profit no loss' basis. The price list of all items shall be conspicuously displayed in such canteen.

54.2 Serving tea and snacks at workplace

At site where workplace is situated at a distance of more than 200 m from the canteen, contractor should made suitable arrangement for serving tea and light refreshment to such building works at such place.

54.3 Drinking water

(i) Contractor shall make in every worksite, effective arrangements to provide sufficient supply of wholesome drinking water throughout the work duration at various locations like tunnel, various level of stations, viaduct and kept in proper hygienic condition. Quality of the drinking water shall conform to the requirements of national standards on Public Health.

(ii) While locating these drinking water facilities due care shall be taken so that these are easily accessible within a distance of 200m from the place of work for all workers at all location of work sites.

(iii) All such points shall be legible marked "Drinking Water" in a language understood by a majority of the workmen employed in such place and such point shall be situated within 06 (six) meters of any washing places, urinals or latrines.

54.4 Labour camp

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.

54.4.1 Provision of Labour Camp

(i) 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.

(ii) 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.

(iii) 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

(iv) The Contractor shall at his own cost, provide the following minimum requirements for fire precautions:

(a) Portable Fire Extinguishers as well as Manual Fire Alarms.
(b) Water Supply for use by the Fire Service.

(v) 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.

54.4.2 Camp Discipline

(i) The Contractor shall take requisite precautions and use his best endeavors to prevent any riotous or unlawful behaviour 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 in the vicinity of 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.

(ii) 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 sub-contractors 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.

(iii) 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 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.

54.4.3 Labour Accommodation

The Contractor shall provide living accommodation that is equal to or exceeds the minimum criteria established in the following sub-sections and also conforming to the provision to section 34 of BOCWA, needed to house his staff, workers employed directly or through sub-contractors. The buildings shall be constructed so as to have a minimum life of not less than the length of the Contract.

(i) 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.

(ii) 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. Suitable no. of common toilet/bath shall be provided.

(iii) The minimum height of each unit shall be 2.10m and shall have separate cooking place.

(iv) Huts should be properly earthed, and all wiring be passed through conduit duct.

54.4.4 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 make arrangements for the provision and laying of water pipelines from the existing mains wherever available and shall pay for all the fees and charges thereof.

54.4.5 Drainage

The Contractor shall provide efficient arrangements for draining away sullage water so as 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.

54.4.6 Sanitation

The Contractor shall make arrangements 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.

54.5 Creche

In every workplace where in more than 50 female workers/ or as mentioned in new/amended legislations are ordinarily employed, there shall be provided and maintained a suitable room for use of children under age of 6 yrs., conforming to the provisions of section 35 of BOCWA or any other new/amended legislations.

54.6 Latrine and urinal

(i) The contractor shall provide one latrine seat for every 20 workers up to 100 workers and thereafter one for every additional 50 workers. In addition, one urinal accommodation shall be provided for every 100 workers

(ii) When women are employed, separate latrine and urinals accommodation shall be provided on the same scale as mentioned above. Latrine and urinals shall be provided as per section 33 of BOCWA and maintained as per Rule 243 of BOCWR and shall also comply with the requirements of public health authorities.

(iii) In case of works like track laying, the zone of work is constantly moving at elevated level or at underground level. In such cases mobile toilets with proper facility to drain the sullage shall be provided at reasonably accessible distance.

(iv) In case if the contractor fail to provide required number of urinals and latrines or fail to maintain it as per the requirements of Public Health laws, the Employer shall have the right to provide/maintain through renowned external agencies like "Sulabh" at the cost of the contractor.

Part – IV: Environment

55.0 Topsoil conservation

(i) The contractor shall ensure that adequate measures are taken for the prevention of erosion of the topsoil during the construction phase.

(ii) The contractor should maintain the record of topsoil quantity excavated from construction from all locations where vegetation existed prior to construction. The record shall include photographic evidence of the topsoil quantity excavated.

(iii) Top soil should be stripped to a depth of 20 cm from the areas to be disturbed, it should be stockpiled to a maximum height of 40 cm in designated areas, covered or stabilized with temporary seeding for erosion prevention and should be reapplied to site during plantation of the proposed vegetation. Topsoil should be separated from subsoil, debris and stones larger than 50mm diameter. The stored topsoil may be used as finished grade for planting areas.

(iv) The Contractor shall not obtain any construction materials from the beds of rivers, streams, lakes or other water bodies, except with prior approval of the competent authority. He shall bear related all costs and abide by the stipulated conditions, if any.

56.0 Felling of trees & tree preservations

(i) The contractor shall identify the number and type of trees that are required to be felled as a result of construction of works and facilities should be informed to Employer.

(ii) All trees and shrubbery, which are not specifically required to be cleared or removed for construction purposes, shall be preserved and protected from any damage that may be caused by Contractor's construction operations and equipment. The contractor shall not fell, remove or dispose of any tree or forest produce in any land handed over to him for the construction of works and facilities without prior approval of concerned authority and employer.

(iii) The Employer shall arrange permission from the forest department for trees to be felled or transplanted. The Employer will permit the removal of trees or shrubs only after prior approval.

(iv) The contractor shall ensure that no tree, existing or otherwise, shall be harmed and damage to roots during trenching, placing backfill, driving or parking heavy equipment, dumping of trash, oil, paint, and other materials detrimental to plant health.

(v) The contractor shall avoid cut and fill in the root zones.

(vi) Special care shall be exercised where trees or shrubs are exposed to injuries by construction equipment, blasting, excavating, dumping, chemical damage or other operation and the Contractor shall adequately protect such trees by use of protective barriers or other methods approved by the Employer. Trees shall not be used for anchorage.

(vii) Trees should be protected around 1m periphery by providing tree guard and no construction or storage of materials shall be carried out within its premise.

57.0 Fly Ash

(i) The contractor shall use fly ash as a percentage substitution of cement, in concrete for certain structures and works as prescribed in the latest MoEF & CC fly ash notification dated September 1999 and its subsequent amendments. The notification makes it mandatory for use

of fly ash-based products in construction activities located within 300Km from coal or lignite based thermal power plants.

(ii) As per the notification, only fly ash based products shall be used for construction such as cement or concrete, fly ash bricks or blocks or tiles or clay fly ash bricks, block or tiles or cement fly ash bricks or bricks or blocks or similar products or a combination or aggregate of them. The contractor shall provide details of usage of such products to employer. The reporting details of fly ash consumption shall be submitted to employer in prescribed format.

(iii) In all such uses of Fly Ash, the contractor shall maintain a detailed record of usage of Fly Ash. The contractor shall also collect related details and provide to the Employer. The reporting details on consumption of Fly Ash shall be submitted to employer in prescribed format.

58.0 Containment of air pollution

58.1 At Construction Site

(i) The Contractor shall erect barricades securely around all construction work sites during the entire phase of construction activity, to contain dust within the site area and to reduce air turbulence caused by passing traffic. The specifications for barricades are found elsewhere in the tender document.

(ii) Barricades are to be installed on either side of the road or at the centre of the road median.

(iii) Barricades are also required at work sites around the periphery of which are located residential or commercial property.

(iv) The barricades shall be safely secured to the ground to prevent from toppling. There shall be no gap between bottom of barrier and ground/road. The barrier shall always be placed till there is likelihood of dust escaping from the site or material being stored at the site.

(v) In case of construction work located near residential or commercial properties, the contractor shall erect barricade of suitable approved material around the entire construction site of height not more than 10m or 1/3rd of building height whichever is less, having acoustic properties, apart from providing relief from dust. There should be no gap in the enclosure erected by the barrier except at entry and exit to or from site.

(vi) The barricading material if used as noise barrier shall conform to have following acoustic properties:

Barrier type	Absorptive
Life span	At least 5 years
NRC	More than 0.75
Insertion Loss	10 dBA

(vii) The barrier material shall be light weight, weatherproof, fire resistant and easy to maintain. The supporting frames and mountings should also be light weight and easy to install.

(viii) Before the start of work, the Contractor shall provide wet automated wheel washing facility with two stage sedimentation tanks at the exit of Batching Plant, Casting Yard, and Underground stations. It shall also be provided at off the road elevated stations. At other locations i.e. viaduct, on the road elevated stations etc. where there are space restrictions, the contractor shall adopt dry wheel cleaning mechanism with prior approval from employer. If work site contains multiple exits, then wheel washing facility shall be provided for all these exits where

vehicle carrying construction materials or trucks or vehicles or plant/machinery transit from construction site on to live public roads. The wheel wash shall be located as close to the exit gate, as possible. However, care to be taken to ensure that the surface from wheel wash to exit gate is either bitumen or concrete paved. The contractor shall ensure the wheel washing facility remains functional till the end of contract.

(ix) At such facility, high-pressure water jets will be directed at the wheels of vehicles to remove all spoil and dirt. Water shall be pumped through an electrically operated pump set, to hydrants attached with rubber hoses, by activation of push button located at the hydrant, allowing for up to 10 minutes of wash time.

(x) Wheel washing facility shall be provided with efficient drainage, incorporating silt traps to prevent any excessive buildup of water. These facilities should include water re-circulation mechanism to minimise water consumption.

(xi) At the wheel wash facility, water, dirt, gravel etc. shall be drained into precast trench drains with removable grated cover. This dirty water shall flow, through a piping, into solids separator and from there to oil separator before final discharge. A representative drawing of wheel washing facility is attached as **Appendix No. XI.**

(xii) At each construction site including batching plant and casting yard, the Contractor shall provide storage facilities for dust generating materials which shall be closed containers/bins or wind protected shelters or mat covering or walled or any combination of the above to the satisfaction of the Employer. Suitable sprinkling system shall be installed and operationalized in this area. The quality of water for sprinkling shall be the same as used for concrete batching.

(xiii) The contractor shall not store any construction material/debris/soil outside barricaded area.

(xiv) Soil, sand, aggregate, debris of any kind and all dust prone material that is stored at site will be fully covered with tarpaulin or hessian cloth in all respects with proper anchorage so that it does not disperse in the air in any form.

(xv) The dust emissions from the construction site should be completely controlled and all precautions taken in that behalf.

(xvi) The Contractor shall use nozzle-based mist system at construction sites such as elevated station, underground station, launching shaft, depot, retrieval shaft, batching plant & casting yard as required to suppress dust.

(xvii) Water mist system shall also be used during the delivery and handling of sand and aggregate and other similar materials, when dust is likely to be generated.

(xviii) At sites where the sprinkling is to be carried out manually, sprinkling will be carried out at a frequency of at least thrice a day or as directed by engineer in charge. For dust suppression contractor should use, STP treated water or RO reject or treated water from sedimentation tank. Use of fresh water should be avoided.

(xix) Stockpiles of sand and aggregate greater than $20m^3$, used for concrete manufacturing, shall be enclosed on three sides, with walls extending above the height of stockpile and two (2) meters beyond the front of the stockpile. The contractor shall provide sprinkler system in sand and aggregate storage area and the water for sprinkling shall be of the same quality as used for concrete batching.

(xx) Areas within the site such as casting yard and batching plant, where there is a regular movement of vehicles shall have an approved hard surface (PCC) that is kept clear of loose surface material.

(xxi) Unless the Employer has given consent otherwise, the Contractor shall restrict all motorised vehicles on the site to a maximum speed of 10 kilometer per hour and vehicles shall move on designated path.

(xxii) The contractor shall use wet jet in grinding and stone cutting works with two stage sedimentation tank facility to recycle/re-use the water. The water from the final chamber of sedimentation tank shall be reused.

(xxiii) In the event recorded PM_{10} level is greater than the Limit levels, the Employer may direct the Contractor to take effective remedial measures including, but not limited to, reviewing dust sources and modifying working procedures.

(xxiv) Where the recorded baseline levels exceed the ambient air quality standards, then at such locations the baseline level shall be considered as limit level. Contractor shall take all effective remedial measures to contain the levels to their limit level as a result of his activities.

(xxv) If the measures to control air pollution are found to be ineffective, the employer may issue stop work order till the time remedial measures are found to be effective to the satisfaction of employer.

(xxvi) At the Batching plant, the following additional conditions shall be complied with:

(a) The Contractor shall not install Star Batcher concrete batching plant for manufacturing/producing concrete.

(b) Inside the batching plant, ground surface must be paved with Cement Concrete. The plant shall have proper drainage system with outlet connected to two stage sedimentation tanks. No dust shall be allowed to deposit on road inside Batching plant.

(c) Continuous dust/wind breaking barricades of height at least 6 meters around the batching plant shall be constructed of suitable material which will act as boundary wall.

(d) If the batching plant is located near the residential area, then the boundary wall shall be acoustically treated to act as noise barrier also. In such event the property of boundary wall cum noise barrier will conform to specification as mentioned above.

(e) The contractor shall provide enough openings in the cement godown/cement feeding area with industrial grade exhaust fans with ducting system. The ducts shall be connected to a container filled with water. The contractor shall cover the conveyor belt used for carrying aggregate.

(f) Water based mist system shall be used during the delivery and handling of sand and aggregate and other similar materials, when dust is likely to be generated and to dampen all stored materials.

(g) The contractor shall provide and ensure dust masks (proper PPEs) to all workers/labour/staff working at batching plant.

(h) The Contractor shall always undertake the prevention of dust nuisance as a result of his activities. The Contractor shall frequently clean and water the concrete batching plant and crushing plant sites and ancillary areas to minimise any dust emission.

(i) The Contractor shall provide beton wash facility (concrete recycling/wash plant) of suitable capacity at casting yard and/ or batching plant to reclaim slurry water and aggregate from transit mixer wash out. The contractor shall ensure the facility remains functional till the end of contract. The washing facility shall be provided with two stage sedimentation pit and efficient drainage system. The water from the final chamber of sedimentation tank shall be reused. The use of slurry water in concrete batching can be explored.

(xxvii) The guidelines as mentioned by the government to be followed during Graded Response Action Plan (GRAP) shall be followed by the contractor.

(xxviii) Minimum stack height of DG set shall be as given in Central Pollution Control Board (CPCB) Emission Regulations Part IV: COINDS/26/1986-87 and Emission Standards for Diesel Engines (Engine Rating more than 0.8 MW (800 KW) which were notified by the Environment (Protection) Third Amendment Rules 2002, vide G.S.R. 489 (E), dated 9thJuly, 2002 at serial no. 96, under the Environment (Protection) Act, 1986.

(xxix) Consent for height of stacks of Diesel Engines with rating more than 800 KW shall be obtained by the Contractor from statutory Government agency. Where the calculated height of stack is obtrusive and does not blend with the neighbourhood, the contractor could provide either alternative source of power or provide a solution that is acceptable to the employer. This may include but not limited to providing appropriate cladding for the stack.

(xxx) Contractor's transport vehicles and other equipment's shall conform to emission standards fixed by Statutory Agencies of Government of India or the State Government from time to time. The contractor shall carry out periodical checks and undertake remedial measure including replacement, if required to ply within permissible norms.

(xxxi) Contractor shall provide green net for dust control at construction sites i.e stations, viaduct, depot, staff quarter, hostel, batching plant, casting yard, at the top of barricade boards near residential/commercial and sensitive areas. These should be of sufficient height and firmly secured so as to prevent escape of dust to residential/ commercial and industrial areas. The contractor shall provide water sprinkling at any time for dust suppression and shall continue dust control activities during work stoppages.

(xxxii) The Contractor shall provide storage facilities for dust generating materials which shall be closed containers/bins or wind protected shelters or mat covering or walled or any combination of the above to the satisfaction of the employer. The Contractor shall take precautions to minimize visible particulate matter from being deposited upon public roads as a direct result of his operations. In locations of Receiving Substation the contractor shall ensure that the wheels of transport vehicles are washed properly while exiting the site. For this, a simple wheel washing facility shall be provided and operated at the exit such that the road from wheel wash up to the exit on to public roads is metalled or tarred.

58.2 During Handling of excavated earth

(i) Storage of Excavated earth should be such that it's maximum height shall be 0.5 m below the barricading height.

(ii) Excavated earth shall be covered with tarpaulin sheets which are firmly secured to the ground, if it is stored at site. If the excavated material is to be stored for long duration, dust containment measures like growing grass should be adopted.

58.3 During Transport of Material/muck/soil/C&D Waste (Debris)

(i) The Contractor shall take precautions to minimise visible particulate matter from being deposited upon public roadways as a direct result of his operations. Toe dust along the barricade shall be cleaned regularly at least once a day

(ii) The vehicle carrying construction materials and construction debris of any kind should be cleaned in all respect before it is permitted to ply on the road.

(iii) The contractor shall take precaution against spillage of concrete on road from transit mixer by providing collection bag at end point discharge chute

(iv) Any deposition of material/muck/soil on public streets due to construction should be promptly removed by manual sweeping, or by deploying electro – mechanical devices.

(v) Trucks carrying construction material, excavated earth and debris shall be fully covered and protected to ensure that these materials do not get dispersed into the air or atmosphere, in any form whatsoever or fall off the vehicle. Such trucks carrying construction material shall not be permitted to leave the site until this requirement is met.

58.4 At Dumping Sites

(i) The dumping sites should be temporarily barricaded by the contractor or as per provisions in the Employer's Requirements on Construction. The contractor shall provide wheel cleaning mechanism at the exit gate of dumping site.

(ii) The Contractor shall place excavated materials in the dumping/disposal areas as designated in the drawings.

(iii) The Contractor shall place material in a manner that will minimise dust generation. Material shall be stabilised each day by watering or other acceptable dust suppression techniques. The Contractor shall provide water sprinkling at any time that it is required for dust control use. Dust control activities shall continue even during work stoppages.

(iv) The heights from which materials are dropped shall be the minimum practical height to limit fugitive dust generation.

(v) The Contractor shall stockpile material in the Employer designated locations with suitable slopes. Access to the site shall be regulated for entry of men, material and machine.

(vi) The contractor should cover the surface with grass to prevent dust generation during summer months and erosion in rainy period. Enough equipment, water, and personnel shall be available at dumping sites at all time to minimise dust formation and to prevent nuisance.

58.5 Anti-Smog Gun

Contractor shall install anti-smog gun at their sites i.e depot, casting yard/batching plant, stations, viaduct and other locations as instructed by employer.

59.0 Containment of water pollution and Conservation of water

The Contractor shall comply in full with all relevant requirements of national legislation governing water quality, including but not necessarily limited to The Environment (Protection) Act 1986 and Environment (Protection) Amendment Rules 2002 (amended 2003, 2004, 2005, 2006, 2007 and 2008), and the Water (Prevention and Control of Pollution) Act 1974 (amended 1988).

The Contractor shall always comply with any specific requirements of these and any other relevant statutes, including prescribed water quality limits and standards as per the following IS codes/CPCB norms/EP rules, and any other relevant legislation, code or guidelines:

- Drinking Water Quality Standards (as per IS: 10500)
- Water Quality Criteria and Standards for Freshwater Classification (CPCB, 1979)
- Tolerance Limits for Inland Surface Waters (as per IS:2296)
- General Standards for Discharge of Effluents [as per Environment (Protection) Rules, 1986]

Notwithstanding the above, the Contractor is expected to maintain the highest standards of environmental performance throughout all his work and to take all necessary precautions to avoid causing any significant pollution of any natural water, both surface and underground. Precautions shall include but not be limited to those specified in Clause mentioned below.

(i) The Contractor shall provide digital water meters at all the bore wells, inlets and outlets of RO plants, dewatering outlets, municipal water delivery points and other suitable locations to record the accurate figures of water extraction and consumption for various purposes and submit the details in prescribed performa. The contractor shall obtain necessary permission for extracting ground water from relevant government agency.

(ii) At underground construction site and dumping sites, temporary drainage works shall be maintained, removed and reinstated as necessary and all other necessary precautions should be taken for avoidance of damage by flooding and silt.

(iii) Temporary open storage of excavated materials from cut and cover and tunneling work used for backfilling at site should be covered with tarpaulin which is firmly secured to ground.

(iv) Polymer slurry or other grouts used in diaphragm wall construction piling and other concrete works shall be collected in a separate slurry collection system. If reuse is not practicable then it shall only be disposed off at nearest landfill site after obtaining permission from agency owning the landfill and under the conditions imposed by the agency concerned, or to a different disposal location as advised by the Employer. Record of disposal of Polymer slurry at landfills or elsewhere shall be maintained by the contractor and reported in the contractor's Monthly Environment Report to be shown to employer when requested.

(v) Beneath the hopper of Batching Plant, the slope of the surface shall be maintained in such a way that the slurry from Batching Plant shall enter sedimentation tank. The area should be cleaned regularly to avoid slush generation.

(vi) Any mud slurry from drilling, tunneling, diaphragm wall construction or grouting etc. shall not be discharged into the drainage system unless treatment is carried out that will remove silt, mud particles etc. The Contractor shall provide treatment facilities as necessary to prevent the discharge of contaminated ground water.

(vii) The Contractor is not allowed to discharge water from the site without the approval of the Employer. The Contractor must comply with the requirements of the Central Ground Water Board for discharge of water arising from dewatering. Any water obtained from dewatering

systems installed in the works must be either re-used for construction purposes or recharged to the ground or pumped into the nearest water body/park or supplied to concerned authority with prior permission of the Employer. In case, the dewatered water is required to be used for reuse in construction or recharge, the Contractor must submit his proposals for prior approval of Employer along with, his proposed locations of dewatering.

(viii) Roof top run-off from casting yard and batching plants as well as water from curing should be conserved through properly designed rainwater harvesting structures via adequately designed sand/silt removal facilities such as sand traps, silt traps or sediment basins. Excess discharge should be discharged into storm drains.

(ix) Perimeter channels/drains shall be constructed in casting yard and batching plant. Silt removal facilities, channels and manholes should be maintained, and the deposited silt and grit should be removed regularly, to ensure that these facilities are always functioning properly.

(x) Oil separator/interceptors shall be provided to prevent the release of oil and grease into the drainage system. These shall be cleaned on a regular basis. Area which is storing admixtures/oils should be connected to a drainage system with a oil & grease trap. Spillage of material during transfer should be avoided by using appropriate /design mechanism for such transfer.

(xi) Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavation should be discharged into storm drains via silt removal facilities.

(xii) Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed to prevent silt, construction materials or debris from getting into the drainage system. Discharge of surface run-off into sewers must always be prevented in order not to unduly overload the sewerage system.

(xiii) The drainage system should cover the entire area of Casting Yard/ Batching Plant. The drainage system shall be designed in such a way that it should have enough capacity to hold the runoff of the catchment area.

(xiv) Wastewater from Reverse Osmosis (RO) plant shall be used only for dust suppression, wheel washing and road washing. It shall not be drained into public sewers or storm water drainage system.

(xv) The Contractor may discharge wastewater arising from site offices, canteens or toilet facilities constructed by him into sewers after obtaining prior approval of agency controlling the system.

(xvi) The contractor is not allowed to discharge wastewater from the site into the sewer without the approval of sewer owing agency. At batching plant temporary drainage works shall be maintained as necessary and all other necessary precautions should be taken for avoidance of damage by flooding and silting. Any mud slurry from batching plant shall not be discharged into the drainage system unless silt, mud particles etc. are removed. At the batching plant, Oil separator/interception shall be provided to prevent the release of oil and grease into the drainage system. These shall be cleaned on a regular basis.

(xvii) Water tapped from the ground or provided by municipal supply for construction shall be measured and records kept. Records of water consumption shall also be kept and provided on request of employer. The Contractor is not allowed to discharge wastewater from the site without the approval of the sewer owning agency. For sites where receiving Substation is

proposed, the main contractor shall ensure that the surface runoff from the site is properly drained to a municipal drainage system and that it does not create water logging in adjacent areas.

60.0 Containment of noise and vibration

(i) Construction often generates community noise/vibration complaints despite the limited time frame over which it takes place. Complaints typically arise from interface with people's activity, especially when community has no clear understanding of the extent or duration of construction.

(ii) This situation underscores the need for early identification and assessment of potential problem areas. An assessment of the potential for complaints can and should be made.

(iii) If done timely, such assessment can aid contractor in allowing changes in construct\ion approach and reduce noise mitigation cost before the construction plans are finalized.

(iv) The contractor shall conform to ambient air quality standards with respect to noise.

(v) The Employer will monitor noise level at site before the start of work and share the values with contractor. Thereafter, the contractor will employ necessary engineering control to ensure that noise elves do not exceed preconstruction noise.

(vi) Where there are no ambient measurements, the noise levels from construction activities shall be limited to levels measured near the construction site as given in table below:

S. No	Land Use	Maximum Noise Levels (Leq- 5min)
1	Industrial	75
2	Residential and Other areas	65

(vii) To the extent required to meet the noise limits, the Contractor shall use reasonable efforts to include noise reduction measures listed below to minimize construction noise emission levels. Noise reduction measures – include, but not limited to the following:

(a) Acoustic barriers should be placed near construction sites and designed of the same should be submitted to employer for review/approval.

(b) Minimize the use of impact devices, such as jackhammers, and pavement breakers equipped noise producing equipment such as jackhammers and pavement breakers with acoustically attenuating shields or shrouds recommended by the manufacturers thereof, to meet relevant noise limitations.

(c) Pneumatic impact tools and equipment used at the construction site shall have intake and exhaust mufflers recommended by the manufacturers thereof, to meet relevant noise limitations.

(d) Provide mufflers or shield paneling for other equipment, including internal combustion engines, recommended by manufacturers thereof.

(e) Employ prefabricated structures instead of assembling on-site.

(f) Use construction equipment manufactured or modified to dampen noise and vibration emissions, such as:

a) Use hydraulic tools instead of pneumatic impact tools.
b) Maximize physical separation, as far as practicable, between noise generators and noise receptors such as locating stationary equipment to minimize noise and vibration impact on community.
c) Use of electric powered equipment instead of diesel-powered equipment.

(g) Grading of surfaced irregularities on construction sites to prevent the generation of impact noise and ground vibrations by passing vehicles.
(h) Schedule work to avoid simultaneous activities that generate high noise levels.

(viii) The contractor shall provide enclosures for stationary equipment and noise barriers around particularly noisy areas on site depending upon the land use.

(ix) To the extent feasible, configure the construction site in a manner that keeps noisier equipment and activities as far as possible from noise sensitive locations and nearby buildings. Plant and equipment known to emit noise in one direction should where possible, be oriented in a direction away from noise sensitive receptor and reduce the number of plant and equipment operating in critical areas close to noise sensitive receptors.

(x) Schedule truck loading, unloading, and hauling operations to minimize noise impact near noise sensitive locations and surrounding communities.

(xi) Other measures that the contractor may adopt to mitigate noise include:
(a) Minimize noise intrusive impacts during most noise sensitive hours
(b) Plan noisier operations during times of highest ambient noise levels
(c) Keep noise levels relatively uniform; avoid excessive and impulse noises.
(d) Equipment and plant should not to be kept idling when not in use.
(e) Use only well-maintained plant & equipment at site, which should be serviced regularly.
(f) Shall maintain equipment such that parts of vehicles and loads are secured against vibrations and rattling
(g) Conduct truck loading, unloading and hauling operations in a manner such that noise and vibration are kept to a minimum.
(h) Route construction equipment and vehicles carrying soil, concrete or other materials over streets that will cause least disturbance to residents in vicinity of work.
(i) Avoid operating truck on streets that pass by schools during school hours

(xii) Select truck routes for muck disposal in such a way that noise from heavy-duty trucks will have minimal impact on sensitive land uses (e.g., residential) and submit the proposed routes to the Employer for approval.

(xiii) If back-up alarms are used on construction equipment, their noise level near noise sensitive receptors such as residences, schools, hospitals and similar areas where silence is essential, should be regulated, especially at nighttime. Visual alarms shall preferably be used during nighttime operation.

(xiv) The contractor shall make efforts to bring down the noise levels due to the DG set, outside his premises, within the ambient noise requirements by proper setting and control measures.

(xv) Installation of a DG set must be strictly in compliance with the recommendations of the DG set manufacturer. The contractor shall ensure that all necessary permissions/ approvals/consent is obtained from relevant authorities before installation and operation of Generator set.

(xvi) A proper routine and preventive maintenance procedure for the DG set should be set and followed in consultation with the DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use

(xvii) The maximum permissible sound pressure level for new diesel generator (DG) sets (upto 1000 KVA) manufactured on or after the 1st July,2003 shall be 75 dB(A) at 1 meter from the enclosure surface. The diesel generator sets should be provided with integral acoustic enclosure at the manufacturing stage itself.

(xviii) Noise limit for DG sets not covered by above paragraph shall be as follows:

(a) Noise from DG set shall be controlled by providing an acoustic enclosure or by treating the room acoustically, at the user's end.
(b) The acoustic enclosure or acoustic treatment of the room shall be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under such circumstances the performance may be checked for noise reduction up to actual ambient noise level, preferably, in the nighttime). The measurement for Insertion Loss may be done at different points at 0.5 m from the acoustic enclosure/room, and then averaged.
(c) The DG set shall be provided with proper exhaust muffler with insertion loss of minimum 25 dB(A)

(xix) If the measures to control noise pollution are found to be ineffective, the employer may issue stop work order till the time remedial measures are found to be effective to the satisfaction of employer.

(xx) Contractor is strongly urged to explore all possibilities for installing Generator set run on Natural Gas viz Gas Generator (GG) set.

(xxi) Vibration consists of rapidly fluctuating motions with an average motion of zero. During vibration the oscillatory waves propagate from the source through the ground to adjacent buildings. Vibration from construction projects is caused by general equipment operations is usually highest during pile driving; soil compacting, jack hammering and construction related demolition activities.

(xxii) The following steps may be taken by the contractor to reduce construction vibration:

(a) Design considerations and project layout:
  a) Route heavily loaded trucks away from residential streets.
  b) If possible, select street with fewest homes, if no alternatives are available.
  c) Operate earthmoving equipment on the construction lot as far away from vibration sensitive sites as possible.

(b) Sequence of operations:
  a) Phase demolition, earthmoving and ground-impacting operations so as not to occur the same time period. Unlike noise, the total vibration level produced could be significantly less when each vibration source operates separately.
  b) Avoid night-time activities. People are more aware of vibration in their homes during the night-time hours

(c) Alternative construction methods:

a) Avoid impact pile driving where possible in vibration-sensitive areas.
b) Drilled piles or the use of a sonic or vibratory pile driver causes lower vibration levels where the geological conditions permit their use.
c) Select demolition methods not involving impact, where possible. For example, sawing bridge decks into sections that can be loaded onto trucks results in lower vibration levels than impact demolition by pavement breakers, and milling generates lower vibration levels than excavation using clam shell or chisel drops.
d) Avoid vibratory rollers and packers near sensitive areas.

(xxiii) To the extent required to meet the noise limits, the Contractor shall use reasonable efforts to minimize construction noise emission levels, some of which are given below:

(a) To the extent feasible, configure the construction site in a manner that keeps noisier equipment and activities, as far as possible, from noise sensitive locations and nearby buildings.
(b) The contractor's equipment and plant should not be kept in idling conditions when not in use.
(c) The contractor shall use only well-maintained plant & equipment at site, which should be serviced regularly.
(d) The maximum permissible sound pressure level for new generator sets (up to 1000 kVA) run on diesel, shall be 75 dBA at one meter from the enclosure surface.
(e) For diesel generator sets having no acoustic enclosures, the noise from the DG set shall be controlled by providing an acoustic enclosure or acoustic treatment of the room for DG sets. Such acoustic enclosures/ acoustically treated rooms shall be so designed for minimum 25dBA insertion loss or for meeting the ambient noise standards, whichever is on higher side.

61.0 Waste management

61.1 General

(i) The following types of waste are most likely to be encountered during execution of contract:

(a) General refuse
(b) C&D waste
(c) Hazardous waste
(d) E-waste
(e) Bio medical waste
(f) Plastic waste
(g) Batteries Waste

(iii) Disposal of waste as per legal requirement is mentioned in the table below:

S. No	Waste Type	Disposal	Legal requirement for handling, storage & disposal
1.	General refuse	Re-use/Recycle/ land fill	Solid Waste Management Rules, 2016
2.	Vegetation/timber etc	As per forest clearance advice	Delhi Tree Preservation Act (1994) and Rules 2010
3.	Construction and Demolition (C&D) waste	Authorized recycling unit/re-use within site	Construction and Demolition Waste Management Rules, 2016
4.	Hazardous waste	Licensed Recycler	Hazardous and Other Wastes (Management & Trans-boundary Movement) Rules, 2016.
5	Electronic waste	Licensed Recycler	E-waste (Management) Rules, 2016
7.	Bio-medical waste	Bio-medical waste treatment and disposal facility	Bio-medical waste Management Rules, 2016
8	Chemical waste	Licensed contractor	Manufacture, Storage and handling of hazardous chemical rules 1989
9	Plastic Waste	Licensed agency	Plastic Waste management Rules, 2016

(iii) In addition to above, excavated earth and metal scrap is likely to be generated in large quantity. The excavated material comprises mainly soil and rock. Soil may be used for backfilling at locations identified by employer. The rock may be sold off.

(iii) The contractor is required to develop, institute and maintain a Waste Management Plan (WMP) during the construction of the project for his works. This WMP shall be a part of Contractor's site Environmental Management Plan. Record of the waste management should be provided in the prescribed format as attached **Appendix - XII**. A Waste Management Plan specific for handling and disposal of C&D waste shall be prepared separately by the contractor as per the provisions of C&D Waste Management Rules, 2016.

(iv) A mechanism is required to ensure that designated areas for the segregation and temporary storage of reusable, recyclable and waste materials are incorporated into the WMP.

(v) The Contractor shall handle waste in a manner that ensures they are held securely without loss or leakage thus minimizing potential for pollution following all legal requirements for handling and storage. The Contractor shall maintain and clean waste storage areas regularly.

(vi) The contractor shall strictly manage transportation and disposal of all waste complying all legal/statuary requirements.

(vii) The contractor shall make available Material Supply Data Sheet (MSDS) for material/chemicals/substances used, for which these are available to the Employer when requested.

(viii) The Contractor shall ensure that the E-waste generated by them is handed over only to producer take back/buy back system or to an authorized dismantler/ recycler/Collector who are part of producers take back channelization system.

(ix) The contractor shall ensure that used lamps are not disposed in the municipal bin but handed over (in a properly packed form) to take back system/ collection and channelization system of producer or to a collection centre of an authorised recycler who is part of producer channelization system.

(x) The contractor shall maintain records of e-waste generated by them in Form-2 (as per E-waste Management Rules, 2016).

61.2 General Refuse

(i) This category of waste is generated from living camps, offices, workshops, kitchen, and other work areas. Such type of waste includes food scraps (solids + liquids), Paper, Cardboard, Plastics (recyclable bottles, other), Glass (different colours), Aluminum and other cans, Wooden boxes, crates etc.

(ii) The Contractor shall provide at site, metal or heavy-duty plastic 'Refuse Containers' with tight fitting lids for disposal of all garbage or trash associated with food. The containers shall not have openings that allow access by rodents.

(iii) To keep the area free of litter and garbage, specific locations shall be designated for consuming food and snacks to prevent random disposal of waste. All waste shall be deposited in the refuse containers Suitable all-weather signage shall be prominently displayed for compliance of these requirements.

(iv) The refuse containers shall be kept upright with their lids shut. These containers shall be emptied at least once daily by the Contractor to maintain site sanitation. There shall be different containers for each category of waste.

(v) General refuse should be stored in enclosed bins or units separate from construction and chemical wastes. A waste collector should be employed by the contractor to remove general refuse from the site daily to minimise odour, pest and litter impacts.

(vi) Handling and disposal of general refuse should cope with the peak construction workforce during the construction period. The refuse should be stored and transported in accordance with good environment practice and disposed at licensed landfills.

(vii) Respective waste with residual value is to be disposed off by selling to recyclers. The remaining can be disposed off through collection and disposal by local municipal agency.

(viii) Office waste can be reduced through recycling of paper if volumes are large enough to warrant collection.

(ix) Burning of refuse at construction site is not permitted. Dumping of any type of waste is strictly prohibited along the bed of river Yamuna.

(x) Colour Coded Dustbin in suitable numbers at each working area shall be used for segregation of waste during collection. The waste management plan should clearly quantify and identify the number and locations of different types of dustbins that will be provided at each working site. Colour coding of dustbins shall be as per given Table:

Type of Waste	Colour
Wet/Organic/ Bio-Degradable Waste	Green Bins with lids
Dry/Recyclable waste (excluding Bio-medical waste/ hazardous waste)	Blue

Bio-Medical waste	Red with lids
E-Waste	Black
Hazardous Waste	Brown

61.3 Construction and Demolition Waste

(i) Construction and Demolition waste" means the waste comprising of building materials, debris and rubble resulting from construction, re-modelling, repair and demolition of any civil structure.

(ii) Construction & Demolition (C&D) waste shall be stored at a designated area.

(iii) The C&D waste shall be disposed off in a manner in compliance with the procedure given in the Construction & Demolition Waste Management Rules, 2016.

(iv) The contractor shall be responsible for collection, segregation and storage of construction and demolition waste, as directed or notified by the concerned local authority in consonance with the Construction & Demolition Waste Management Rules, 2016.

(v) The contractor shall ensure that other waste does not get mixed with this waste and is stored and disposed separately.

(vi) The contractor shall dispose C&D waste only at authorized processing facilities and ensure that there is no littering or deposition of construction and demolition waste so as to prevent obstruction to the traffic or the public or drains.

(vii) Disposal of C&D waste along the riverbed, natural drainage and wet land is strictly prohibited and the contractor shall be fined for non-compliance of this requirement in addition to the penalty imposed by the NGT from time to time.

(viii) Generated concrete/RCC/PCC waste shall be disposed off regularly or should also be recycling in safe manner.

(ix) A proper arrangement in record keeping must be maintained to ensure disposal of C&D waste to C&D waste recycling plant. For this purpose, it is required that contractor shall generate triplicate copies/slips of dispatch when sending C&D waste from site to C&D recycling facility. One copy be retained at site, one copy for C&D waste processing authority and one received copy from C&D waste processing authority to be kept along with the initial copy. The slip shall contain name of contractor, serial number, date, vehicle number and quantity of waste among other things. The actual quantity of C&D waste shall be that which is mentioned by weighing bridge slip generated by the C&D waste recycling facility. Contractor shall submit the record of C&D waste disposal to recycling facility, in his Monthly Environment Report.

(x) All the copies of dispatch slip will be countersigned by employer site staff and will be used for reconciliation of quantity of C&D waste disposed.

(xi) C&D recycled products may be used for external development and road works or as agreed by the employer. Before accepting recycled products, the same shall be tested as per required specifications. The recycled materials products shall be used in non-structural members like kerb stone, paver tiles in foot path, earth filling, use of bricks in non-load bearing partition walls, boundary walls, toe walls, recycled aggregates in lean concrete/PCC etc.

(xii) As per requirements of C&D Waste Management Rules 2016 and its subsequent amendments, a C&D waste board is to be displayed at entry to the site.

62.0 Hazardous Waste Management

(i) Generally, the hazardous waste from construction site includes used oil, grease, oil filters etc. A comprehensive list of hazardous waste is found in Hazardous waste management and handling rules 2016. If encountered or generated as a result of Contractor's activity, then waste classified as hazardous under the "Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 shall be disposed off in a manner in compliance with the procedure given in the rules under the aforesaid act.

(ii) Chemicals classified as hazardous chemicals under "Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 of Environment (Protection) Act, 1986 shall be disposed off in a manner in compliance with the procedure given in the rules under the aforesaid act.

(iii) The contractor shall identify the nature and quantity of hazardous waste generated as a result of his activities. The contractor shall obtain authorization for handling, storage of hazardous waste from the concerned pollution control board/committee. The contractor shall file annual return in prescribed format with the concerned pollution control board/ committee and forward a copy of receipt to employer.

(iv) The contractor shall provide and maintain a separate hazardous waste storage area for:

(a) flammable, ignitable, reactive and
(b) Non-compatible wastes with suitable opening, Flame proof Electrical fittings should be at 15 m distance between the storage sheds.

The storage yards should be provided with proper peripheral drainage system connected with the sump to collect any accidental spills.

(v) The storage area for Hazardous waste shall:

(a) Be clearly labelled and used solely for the storage of chemical waste;
(b) Be enclosed on at least three sides;
(c) Have an impermeable floor and bunding of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the hazardous waste stored in that area, whichever is greater;
(d) Have adequate ventilation;
(e) Be covered to prevent rainfall entering and
(f) Be arranged so that incompatible materials are adequately separated

(vi) Outside the storage area, the contractor shall place a 'display board', which will display quantity and nature of hazardous waste, on date. Hazardous Waste needs to be stored in a secure place.

(vii) It shall be the responsibility of the contractor to ensure that hazardous wastes are stored, based on the composition, in a manner suitable for handling, storage and transport. The labelling and packaging are required to be easily visible and be able to withstand physical conditions and climatic factors

(viii) Lubricants including oil and grease generated from operation of the TBM should be disposed off as a hazardous waste.

(ix) Drip pans of suitable size and numbers shall be used to collect oil leakages and spills. The area shall be cleaned after completion of maintenance/repair and generated waste disposed off in approved manner.

(x) The contractor shall approach only authorised recyclers of Hazardous Waste for disposal of Hazardous Waste, under intimation to the Employer.

62.1 Chemical Waste

(i) The contractor should ascertain if some paints and solvents are classified as chemical waste and, if used on site, shall be subject to the stringent requirements of the Waste Disposal of Chemical Waste. Empty paint cans shall be recycled or collected as waste.

(ii) Any dry paint waste should be swept up (broomed/ vacuumed) and collected in containers for disposal.

(iii) Containers used for the storage of chemical waste shall:

(a) Be suitable for the substances they are holding, resistant to corrosion, maintained in good condition, and securely closed.
(b) Be of adequate capacity and
(c) Display a label in English and Hindi as to the contents, quantity and safe method of disposal in accordance with instructions contained in Material Safety Data Sheet (MSDS).

(iv) The storage area for chemical waste shall:

(a) Be clearly labelled and used solely for the storage of chemical waste;
(b) Be enclosed on at least three sides;
(c) Have an impermeable floor and bunding of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is greater;
(d) Have adequate ventilation;
(e) Be covered to prevent rainfall entering and
(f) Be arranged so that incompatible materials are adequately separated.

(v) Disposal of chemical waste shall be through a licensed waste collector duly authorized by the MoEF & CC or State Pollution Control Board under intimation to the Employer.

(vi) No lubricants, oils, solvents or paint products shall be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.

(vii) In sum, even though the exact quantities of chemical waste that will be generated per contract are expected to be small, still, because of the potential environmental and Safety & Health hazard that these chemicals pose, they must be handled, stored and disposed of appropriately, in accordance with the law.

62.2 Metal Scrap

(i) Steel and other metals should be recovered from the construction waste and recycled as far as practical.

(ii) The contractor shall have a separate scrap yard with hard surface

(iii) Disposal of scrap shall be through a licensed waste collector/recycler under intimation to the Employer.

62.3 Polymer Slurry

(i) Polymer slurries or other grouts used in diaphragm wall construction, piling and other concrete works should be collected in a separate slurry collection system.

(ii) If reuse is not practicable then it should be disposed off at nearest landfill site after obtaining permission from agency owning the landfill and under the conditions imposed by the agency concerned, or to a different disposal location as advised by the Employer.

(iii) Some Polymer slurry shall be used in diaphragm wall, bore-pile or to support the cutting face during maintenance of the TBM. This should be reconditioned and reused wherever practicable.

(iv) However, it may not be possible for re-use when it is extracted along with rock waste when tunnelling resumes following each intervention period. In this case the polymer will be mixed with rock and drained as usual before sending to the final disposal site.

63.0 Environmental monitoring

63.1 General

(i) The Contractor shall carry out the monitoring of air, noise, vibration and ground water to assess the impact on environment during construction.

(ii) In addition, soil monitoring shall be carried out at underground station till no excavation is required. Representative sensitive receivers in the vicinity of the works shall be monitored for noise and air quality impacts. Vibration monitoring shall be carried out as and when directed by the employer.

(iii) The Environmental monitoring shall be carried out by a recognised agency/lab (approved by employer).

(iv) The contractor shall release the payment due to the monitoring agency within 2 months of the submission of bills failing which the Employer may directly make the payment to such agencies and adjust this amount from the payment which is due to the contractor.

63.2 Air Monitoring

The Contractor shall comply in full with all relevant requirements of national legislation governing air quality, including but not necessarily limited to The Environment (Protection) Act 1986 and Environment (Protection) Amendment Rules 2002 (amended 2003, 2004, 2005, 2006, 2007 and 2008), and the Air (Prevention and Control of Pollution) Act 1981 (amended 1987).

The Contractor shall always comply with any specific requirements of these and any other relevant statutes, including prescribed air quality limits and standards as follows:

- National Ambient Air Quality Standards (NAAQS) amended till date; and
- General emission standards as per the Environment (Protection) Rules, 1986.

The Contractor is solely responsible for obtaining all consents and approvals from government competent authorities as required by national laws on air quality and shall provide the Engineer with copies of all necessary approvals before construction begins.

(a) For carrying out air monitoring the contractor shall appoint agency duly approved by employer. The contractor shall provide 220V AC power point, safety and security of monitoring equipment and suitable access at each monitoring point. Monitoring stations should be free from local obstructions or sheltering.

(b) The monitoring shall be carried out till handing over of the site to the employer.

(c) Ambient Air Quality Standards have been notified by the CPCB vide Gazette Notification dated 16th November 2009. These standards must be referred by the Contractor for Limit Levels of PM_{10} and $PM_{2.5}$ in ambient air which may be followed in estimating the pollution level caused by Contractor's activities.

(d) Employer will undertake baseline monitoring to establish background levels. Action Level of the Contractor shall be based on the results of baseline monitoring programme, which will be made available to him.

(e) Where the Employer determines that the recorded PM_{10} & $PM_{2.5}$ levels are significantly greater than the Limit levels, the Employer may direct the Contractor to take effective remedial measures including, but not limited to, reviewing dust sources and modifying working procedures.

(f) Where the recorded baseline levels exceed the ambient air quality standards, then at such locations the limit level is the recorded baseline. Contractor shall take all effective remedial measures to contain the levels to their baseline value as a result of his activities.

(g) The Contractor should inform the employer of all steps taken to investigate cause of exceedance and immediate action taken to avoid further exceedance through written reports and proposals for action.

(h) The contractor shall ensure calibration of monitoring instruments and their respective calibrators shall be carried out in accordance with the manufacturer's requirement to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications.

(i) The Contractor shall keep records of air quality monitoring (including location, date, time) and shall be available for review by the Employer. The Contractor shall submit a copy of monitoring results through the Monthly Environment Report (MER) to the Employer.

(j) PM_{10} monitoring shall be done using Respirable Dust Sampler (RDS) and for $PM_{2.5}$ either cyclone or impactor shall be used. Monitoring shall be done as per CPCB methodology

(k) PM_{10} shall be monitored at following locations:

(a) Batching Plant and Casting Yard
(b) Elevated Stretch (Station and Viaduct)
(c) Underground Station (at ground level)

(l) $PM_{2.5}$ shall be monitored in tunnel. In addition, the employer may direct contractor to carry out monitoring of $PM_{2.5}$ at those location where PM_{10} monitoring is carried out if need arises.

(a) At Batching Plant/Casting Yard, the RDS sampler to be placed such that:

a) The entry point of air should be at 2.5± 0.5 m above the ground.
b) The sampler to be placed near to the receptor at least 2.5-3.0 m away from barricades/obstruction.
c) Ensure flow rate of 1.15m^3/m.
d) The location will be finalized by environmental engineer at site in consultation with employer.

(b) Elevated stretch: PM_{10} monitoring to be carried out at every elevated station at a height of 2.5 ± 0.5 m. In the viaduct PM_{10} monitoring to be performed at one location per 2 kms, if station is not within 2 km. The location of air monitoring in viaduct will be specified by Environment Engineer in consultation with employer.

(c) Underground Station: PM_{10} to be monitored at 2.5± 0.5 m above the ground. The specifications to be as per elevated stations

63.3 Noise Monitoring

(i) Noise monitoring shall be carried out at Batching plant, Casting Yard, Elevated station, Underground station, Depot, Staff Quarter, Hostel and near viaduct once in a week till site is handed over to the employer. The monitoring location shall be near to boundary of construction site and or as directed by the employer. Construction noise measurements shall coincide with daytime and night-time periods of maximum noise generating construction activities.

(ii) The Contractor shall submit a copy of monitoring results. The results should represent a comparison of data in form of bar charts for evaluation of trends and comparison with noise emission standards.

(iii) Where the Employer determines that the recorded Noise level is significantly greater than the acceptable levels, the Employer may direct the Contractor to take effective remedial measures including, but not limited to, reviewing noise sources and modifying working procedures.

(iv) Monitoring shall be carried out for day and night separately.

(v) The noise monitoring parameters are L_{max}, L_{min}, L_{eq}, L_{90}, L_{50} & L_{10}. All the parameters will be reported separately for day-time and night time.

(vi) The contractor shall ensure calibration of noise monitoring instrument and its calibration shall be carried out in accordance with the manufacturer's requirement to ensure it perform to the same level of accuracy as stated in the manufacturer's specifications.

(vii) Type I/II integrating sound level meter with free -field microphone and tripod stand of 1 to 1.5 m high shall be used for noise monitoring. The microphone of the instrument shall be near the receptor.

(viii) Contractor shall maintain a Class 1 integrating sound level meter with proper calibration certificate at all time, for recording instantaneous noise level during the high noise generating activities and planning suitable mitigation measures.

63.4 Vibration

(i) Steady State Vibration on any pre-identified site or building shall be measured on any foundation or intermediate storey of any building, as directed by the employer or his representative.

(ii) Vibration measurements shall be made preferably in velocity mode (PPV) or acceleration (dBv / vdB) in X-Y-Z directions with the help of a measurement system calibrated in an NABL accredited laboratory/equivalent. The transducer used for measurements should be firmly fixed on to the measurement surface as per internationally accepted measurement practices. Precautions should be taken to ensure that the mounting methods do not affect the accuracy of measurement results. The accelerometer shall be fixed firmly to the vibrating surface with the help of special wax or through magnetic mounts.

(iii) The measured vibration values should be accurate within an overall measurement uncertainty of ±10 % over the frequency range 1Hz – 100 Hz.

(iv) The data should be presented in suitable single number quantities like VdB or PPV values as per current international practices so that the final values are comparable directly with the accepted norms for structural integrity, human comfort etc.

63.5 Ground Water

(i) The employer may require the contractor to monitor surface/ ground water, for which requirements of IS 10500:2012 or its latest amendments shall be followed for sampling and testing (physical and chemical parameters).

(ii) Frequency of such monitoring at batching plant and or casting yard may be once in six months.

63.6 Soil

The contractor shall carry out soil testing at all underground stations. The frequency of testing shall be once in six months till no excavation is required. The parameters of monitoring shall be Lead (Pb), Cadmium (Cd), Chromium (Cr6+), Mercury (Hg), Arsenic (As) and cyanide (CN). The sample collection, testing shall be as per relevant APHA standard.

63.7 Environmental Monitoring Plan

The various parameters, monitoring locations and Frequency of monitoring are presented below:

Parameters	Location	Frequency
Air		
PM_{10} (μ/m^3)	All station locations, depot, batching plant* Casting yard*	2x 24 hrs once in 15 days
$PM_{2.5}$ (μ/m^3)	Inside the Tunnel and in underground stations	2 x24 hrs once in 15 days
Noise		
Day Time (6 AM – 10PM) L_{max}, L_{min}, L_{eq}, L_{10}, L_{90}, L_{50}	All station locations, depot, Batching plant* Casting yard*	Once a week for 24hrs (Separately for day-time and night time)

Parameters	Location	Frequency
Night Time (10PM – 6AM) L_{max}, L_{min}, L_{eq}, L_{10}, L_{90}, L_{50}		
Ground Water		
pH, Sodium, Potassium, Chloride, Nitrogen, Phosphorus, Organic Matter, Heavy Metals (Mercury, Cadmium, Arsenic, Cyanide, Lead, Chromium), Oil & Grease.	At Batching Plant and Casting Yard	Once in six months
Soil		
Lead (Pb), Cadmiun (Cd), Chromium (Cr6+), Mercury (Hg), Arsenic (As) and cyanide (CN).	At underground stations	Once in six months
Vibration		
Vibration in mm/s or VdB.		During complaints or as directed by employer.

64.0 Environmental Sanitation

(i) Environmental Sanitation refers to providing for a clean, hygienic, safe and aesthetically pleasing work area, as far as possible. It is also referred to as good housekeeping.

(ii) The Contractor shall constitute a special group of housekeeping personnel in charge of each work section. Contractor's Environment officer shall be responsible for Environmental sanitation/housekeeping at their respective site.

(iii) Each section of work site shall maintain the site reasonably clean, keep free from obstruction and properly store any construction equipment, tools, and materials. Any wreckage, rubbish shall be temporarily stored in wreckage and rubbish bins. These wreckage and rubbish bins shall be cleaned at frequent intervals. Special housekeeping group will ensure daily cleaning work at the site and its surrounding areas.

(iv) The Contractor should conduct necessary introduction and education to labours on housekeeping. This will be done through toolbox talks.

(v) Every individual would be responsible for environmental sanitation in his area i.e.

(a) At Work Site: All workers should clean their workplace after completion of their job. Supervisor should ensure good environmental sanitation of their respective work area through their workers Environment Managers shall ensure sanitation in their area

through their supervisors Contractor will monitor this activity through environment manager as well as site supervisor.

(b) Labour Camp: All workers should be responsible to maintain good sanitation and hygienic condition in their respective rooms/dormitories. The Contractor should ensure the availability of dustbins at required place and regular cleaning of rooms, kitchens, toilet blocks and dustbins. Safe disposal of all waste materials should also be ensured. Arrangement for regular fumigation should be made by the contractor.

(c) At Store: Proper access and stacking shall be ensured at the Stores. A list will display daily stock of materials. All work material should be stored in clearly marked containers or at designated storage area.

(d) At Office: Everyone is responsible to maintain sanitation of their workstation. Disposal of waste materials (i.e. stationary, cigarette buds, tea bags etc.) must be in dustbin only.

(vi) Each section of work site shall maintain the site reasonably clean, keep free from obstruction and properly store any construction equipment, tools and materials. Any wreckage, rubbish shall be temporarily stored in wreckage and rubbish bins. These wreckage and rubbish bins shall be cleaned at frequent intervals.

(vii) General Housekeeping shall always be carried out and ensured at work sites, Labour camps, Stores and Offices.

65.0 Avoidance of nuisance

(i) The Contractor shall take all precautions to avoid any nuisance arising from his operations. This shall be accomplished, wherever possible by suppression of nuisance at source rather than abatement of the nuisance once generated.

(ii) Following site clearing and before construction, the Contractor shall remove all trash, debris and other weeds.

(iii) The Contractor shall ensure that the workplace is free of trash, garbage, debris and weeds.

(iv) Light used for construction can illuminate adjacent areas in undesired ways. Such lighting and glare shall be prevented from striking adjacent areas, where feasible, through directional shielding.

(v) The other measures include but not limited to:

(a) Erection of decorative screen hoarding prominently displaying the awareness messages.
(b) Minimizing height of temporary buildings.
(c) Careful positioning of construction equipment.
(d) Eliminating the possibility of stockpiles of material from being visible to public.
(e) Strategically placing high visibility site markings at construction sites indicating facilities, offices and stores.
(f) Adequate and properly managed parking of vehicles at construction depots and batching plants.

(vi) Measures shall be taken to prevent Mosquito breeding at site. The measures to be taken shall include, but not limited to, the following:

(a) Construction run-off shall not be allowed to stagnate at work sites specially at construction depots and batching plant locations, by executing and efficient drainage system and / or levelling of low-lying areas.

(b) Empty cans, oil drums, packing and other receptacles which may retain water shall be deposited at a central collection point and shall be removed from site regularly.

(c) Still waters shall be treated at least once every week with oil in order to prevent mosquito breeding; contractor's equipment and other items on the site, which may retain water, shall be stored, covered or treated in such a manner that water could not be retained.

(d) All coolers should be scrubbed and cleaned once a week and mopped, dry before refilling and if cannot be emptied, put one tablespoon of temephos/ petrol.

(e) Collection of stagnant water should not be allowed inside or around construction sites / office premises/ project sites / parking area/ labour camps and if the same does not take place a little quantity of kerosene/ petrol/ diesel may be put in such stagnant wastewater collection.

(f) Ensure that overhead and other water tanks / containers are kept closed properly with lid and overflow pipe/ air vent are covered with wire mesh.

(g) Unused/ broken bottles, plastic cups, pots and tires etc that can hold water should not be left in open in all contractors' premises.

(h) Provision of access to roof tops and overhead tanks in all contractors' offices to facilitate checking of mosquito breeding.

(vii) The Contractor shall take all precautions to avoid any nuisance which includes (i) Improper environmental sanitation (housekeeping), (ii) improper stacking of materials, (iii) lack of barricades where required, (iv) emission of dust, wastewater, waste and noise etc which is a cause of complaint, arising from his operations. This shall be accomplished, wherever possible by suppression of nuisance at source rather than abatement of the nuisance once generated.

66.0 Archaeological and historical preservation

(i) The contractor shall seek to accommodate archaeological and historical preservation concerns that may arise due to the construction of the project especially in close vicinity of such areas where such monuments may be located.

(ii) The contractor shall consult the Archaeological Survey of India (ASI) and other parties, on the advice of the Employer, to identify and assess construction effects and seek ways to avoid, minimize or mitigate adverse effects on such monuments.

(iii) Adverse effects may include reasonably foreseeable effects caused by the construction that may occur later in time, be farther removed in distance or those that alter, howsoever temporarily, the significance of the structure.

(iv) Where the alignment, runs within the prohibited/regulated zone of the monuments, Employer will apply for No Objection Certificate (NOC) from Director of Archaeology Archaeological Survey of India as per provision of National Monuments and Archaeological Sites and Remains (Amendment & Validation Act 2010).

67.0 Landscape and greenery

(i) As far as is reasonably practicable, the Contractor shall maintain ecological balance by preventing deforestation and defacing of natural landscape.

(ii) The Contractor shall, so conduct his construction operations, as to prevent any avoidable destruction, scarring or defacing of natural surroundings in the vicinity of work.

(iii) Where destruction, scarring, damage or defacing may occur as a result of operations relating to Permanent or Temporary works, the same shall be repaired, replanted or otherwise corrected at Contractor's expense. All work areas shall be smoothened and graded in a manner to conform to natural appearance of the landscape as directed by the Employer.

(iv) Contractor shall clear the construction site of all scarp, dust, C&D waste and restore the site as per initial condition at the end of contract. Final dues to the contractor shall be paid only after the Employer is satisfied with the restoration of site.

68.0 Environmental site inspection

(i) Site inspection shall be undertaken by the Contractor's Project Manager along with Environmental team to inspect the construction activities in order to ensure that appropriate environmental protection and pollution control measures are properly followed and implemented. The frequency of site inspection shall be at least once a week.

(ii) The Contractor shall, submit to the Employer a contract specific comprehensive Environment Inspection checklist as requirement of Site Environmental Plan.

(iii) The area of inspection shall not be limited to environmental compliance within the site but areas outside the site which are likely to be affected, directly or indirectly by activities at site.

(iv) Results of inspection shall be discussed with Employer and his recommendations on better environmental protection shall be notified to the Contractor for taking immediate action and rapid resolution of identified non-compliance.

(v) If significant environmental problems are identified or if there is an environmental complaint or as a part of investigation work, then the Employer shall also carry out Ad hoc site inspection which shall be attended by Contractor's Representative.

(vi) The results of monthly environmental inspection shall be discussed in monthly SHE committee meeting.

69.0 Bio-toilet

(i) The contractor shall provide bio toilets at every construction site. Additional information regarding this can be found at Part-III occupational Health and Welfare Section of this document.

(ii) The upkeep of the Bio-toilets in hygienic manner, disposal of waste and similar issues shall be the responsibility of the contractor.

(iii) The Bio-toilets shall be dismantled after work is completed in entirety and written approval for the same has been obtained from the Employer.

(iv) The general specification of bio-toilets is listed below:

(a) Single Cabin FRP Structure with water tank and bio-digester
(b) The cabin shall be made of FRP material
(c) Bio-Digester tank of required capacity (Bio Digester Tank will be minimum 5 mm thick FRP material)
(d) Easy to install at site

Part – V: Penalty on SHE violations & Disciplinary actions

70.0 In this document, key requirement to ensure safe execution of work has been mentioned. Contractor shall ensure strict compliance of all the clause of this documents as well as statutory requirements on Health, Safety & Environment as well as Welfare provisions. If contractor fails to ensure the compliance of this document or statutory requirements or any other standard safe practices to ensure safe work execution, employer will take disciplinary action against the violator and also imposed financial penalty on contractor. The clause wise details of financial penalty for SHE and welfare violations are as below:

S. N.	Clause/Element	SHE & Welfare violations	Penalty Amount
1.	ISO certification	Non- Compliance of clause 3.3.2	Rs 1, 00,000/- for first violation and Rs 2,00,000/- for subsequent month
2.	OHS & E Policy & Plan	Non-Compliance of clause 4.2.1 & 4.2.2 Non-Compliance of clause 4.2.3	Rs 50,000/- for first Violation and Rs 1,00,000/- for subsequent violations
3.	Employer's approval	Non-Compliance of clause 5.4	Rs 1,00,000/- for single violation compounded to a maximum of Rs 5,00,000/- at single instance
4.	SHE organization	Not comply to minimum requirement as mentioned in Appendix – III	Rs 1,00,000/- for first violation and Rs 2,00,000/- for subsequent violations
		Not comply to minimum qualification and experience as mentioned in Appendix – IV	Rs 50,000/- for first violation and Rs 1,00,000/- for subsequent violations
		Non-Compliance of clause 6.3.2 & 6.4	Rs 1,00,000/- for first violation and Rs 2,00,000/- for subsequent violations
		Non-Compliance of clause 6.5,6.7 & 6.9	Rs 50,000/- for first Violation and Rs 1,00,000/- for subsequent violations
5.	SHE committee	Non-Compliance of clause 7.0	Rs 50,000/- for first Violation and Rs 1,00,000/- for subsequent violations
6.	Identification Card	Non-Adherence to clause 9.1,9.2,9.3 &9.4	Rs 10,000/- per first violations compounded to a maximum of Rs 50,000/- at any single instances
7.	SHE Training	Non-Compliance of clause 10.1, 10.2, 10.5 & 10.6	Rs 50,000/- per single violations compounded to a maximum of Rs 2,50,000/- at any single instances
		Non-compliance of clause 10.7, 10.9, 10.11, 10.13, 10.16, 10.17 & 10.18	
8.	SHE site inspection	Non-Adherence to clause 11.2,11,4 & 11.6	Rs 50,000/- for first violation compounded to a maximum of Rs 2,50,000/- at any single instances
		Non-Adherence to clause 11.5	Rs 25,000/- for first violation compounded to a maximum of

			Rs 1,25,000/- at any single instances
9.	SHE audits	Non-Compliance of clause 12.1.1 & 12.1.2	Rs 1,00,000/- for first month and Rs 2,00,000/- for subsequent months
		Non-Compliance of clause 12.1.6 & 12.4	R 50,000/- for first Violation and Rs 1,00,000/- for subsequent violations
10.	SHE awareness & communication	Non-Compliance of clause 13.0	Rs 25,000/- for first violation compounding to a maximum of Rs 1,25,000 at a single instance
11.	SHE submittals to Employer	Non-Compliance to clause 14.1 and 14.3	Rs 50,000/- for first Violation compounded to a maximum of Rs 1,00,000/- at any single instance
12.	Incident reporting & Investigation	Fatal Incident	Rs 15,00,000/- for single fatality and Rs 30,00,000/- for subsequent fatality
		Major Incident	Rs 3,00,000/- for first grievously injury and Rs 6,00,000/- for every subsequent grievously injury
		Dangerous occurrence	Rs 2,00,000 for first occurrence and Rs 4,00,000/- for subsequent occurrence
		Non-Compliance to clause 15.1, 15.2 & 15.3	Rs 1,00,000/- for first Violation and Rs 2,00,000/- for subsequent violations
13.	Emergency Preparedness & Response plan	Non-Compliance of clause 17.1,17.3, 17.4,17.5 & 17.6	Rs 25,000/- for single violation compounded to a maximum of Rs 1,25,000/- at any single instances
14.	Site surveillance/monitoring	Non-Compliance of clause 21.0 & 21.1	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
		Non-Adherence of clause 21.2, 21.3 & 21.5	
15.	Housekeeping	Non-Adherence of clause 22.2, 22.3, 22.4, 22.5, 22.6, 22.7, 22.8 & 22.9	Rs 20,000/- per single violation compounded to a maximum of Rs 1,00,000/- at any single instance
16.	Working at Height	No proper supervision as per clause 23.1	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
		No height pass for worker working at height as per clause 23.2	
		Non-Adherence to clause 23.5,23.6,23.7,23.8 & 23.9	
17.	Ladders & Scaffold	Non-Adherence to clause 24.1	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
		Non-Adherence to clause 24.2	

		Improper usage (less than 1 m extension & not maintaining 1:4 base to height ratio	
		Non-Compliances of clause 24.2	
		Vertical interval of ledgers of scaffold more than 500 mm.	
		Non-Adherence to clause 24.2.3	
		Absence of inspection tag as per clause 24.2.5	
18.	Structural frame & Formwork	Non-Adherence to clause 25.1, 25.3 & 25.4	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
		Absence of proper access/egress	
19.	Lifting appliances & Operation & lifting gears	Non-Compliance of clause 26.4.1**,** 26.4.2**,** 26.4.3, 26.4.4, 26.5.1, 26.5.2, 26.5.3, 26.5.5, 26.5.6, 26.5.7, 26.6.1, 26.7.1, 26.7.3, 26.9.4, 26.10.5, 26.11.2, 26.11.4, 26.12, 26.13.1, 26.13.2, 26.13.4, 26.14.1, 26.14.3, 26.14.4, 26.14.5, 26.15.5, 26.15.7, 26.16, 26.17, 26.18, 26.19.2, 26.20, 26.21, 26.22	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
20.	Excavation & Tunneling	Non-Compliance of clause 27.1.2	Rs 25,000/- per single violations compounded to a maximum of Rs 1,25,000/- at any single instance
		Non-Adherence of clause 27.1.3	Rs 50,000/- per single violations compounded to a maximum of Rs 2,50,000/- at any single instance
		Non -Compliance of clause 27.2.1, 27.2.2,27.2.3, 27.2.5, 27.2.6.2, 27.2.7, 27.2.8, 27.2.9, 27.2.10, 27.2.12	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
		Non-Compliance of clause 27.2.4, 27.2.6.1, 27.2.11, 27.2.13, 27.2.14	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
21.	Demolition	Non-Adherence of clause 28.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
22.	Transport & Earth moving equipment	Non-Adherence of clause 29.1	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
		Non-Compliance of clause 29.2, 29.3, 29.4, 29.5, 29.6	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single

			instance
23.	Launching girder & operation	Non-Adherence of clause 30.2	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
24.	Electrical system	Non-Adherence of clause 31.2 31.3, 31.4, 31.8	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
		Non-Compliance of clause 31.5, 31.6, 31.7	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
25.	Hand & Power tools	Non-Compliance of clause 32.1, 32.2	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
26.	Hot work	Non-Adherence of clause 33.1, 33.2	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
27.	Fire prevention & protection arrangement	Non-Adherence of clause 34.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
28.	Overhead protection	Non-Adherence of clause 35.0	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
29.	Slipping, Tripping, Cutting, drowning & falling hazards	Non-Adherence of clause 36.0	Rs 25,000/- per single violations compounded to a maximum of Rs 1,25,000/- at any single instances
30.	Machine & general area guarding	Machine guard not available or inadequate	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
31.	Manual material handling	Non-Compliance of clause 38.1, 38.3	Rs 25,000/- per single violations compounded to a maximum of Rs 1,25,000/- at any single instance
32.	Dangerous & harmful environment	Non-Adherence of clause 39.0	Rs 25,000/- per single violations compounded to a maximum of Rs 1,25,000/- at any single instance
33.	Corrosive substances	Non-Adherence of clause 40.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
34.	Permit to Work system	Appropriate permit to work not available at site	Rs 25,000/- per single violation compounded to a maximum of

		Non-Compliance of clause 41.4	Rs 1,25,000/- at any single instance
		Permit to work issued without considering on ground condition	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
35.	Piling operation	Non-Compliance of clause 42.1, 42.3**,** 42.4**,** 42.5	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
36.	Explosive & blasting	Non-Adherence of 43.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
37.	Pressure plant & equipment	Non-Compliance of clause 44.1, 44.2**,** 44.3**,** 44.4, 44.6	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
38.	Traffic Management	Non-Compliance of clause 45.2, 45.4, 45.8	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
		Non-Compliance of clause 45.7. i, 45.7.ii, 45.7.iii	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
39.	Personal Protective Equipment	Noncompliance of clause 46.1, 46.2, 46.3, 46.4	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
40.	Work adjacent to railway	Non-Adherence of clause 47.0	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
41.	Visitors at site	Non-Adherence of clause 48.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
42.	Batching Plant/casting yard	Non-Adherence of clause 49.0	Rs 20,000/- per single violation compounded to a maximum of Rs 1,00,000/- at any single instance
43.	Medical facilities	Non-Adherence of clause 50.1, 50.3, 50.4, 50.10	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
44.		Non-Adherence of clause 50.5, 50.6, 50.8, 50.9	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance

45.	Noise	Non-Adherence of clause 51.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
46.	Vibration	Non-Adherence of clause 52.0	Rs 50,000/- per single violations compounded to a maximum of Rs 2,50,000/- at any single instance
47.	Ventilation	Non-Adherence of clause 53.1	Rs 50,000/- per single violations compounded to a maximum of Rs 2,50,000/- at any single instance
48.	Radiation	Non-Adherence of clause 53.2	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
49.	Welfare provisions/amenities	Non-adherence of clause 54.3, 54.4.4, 54.4.5, 54.4.6, 54.6,	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
50.		Non-Adherence of clause 54.1,54.2, 54.4, 54.4.1, 54.4.2 & 54.4.3,	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
51.	Topsoil Preservation	Non-adherence to clause 55.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
52.	Felling of Trees & Tree Preservation	Non-adherence to clause 56.0	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
53.	Containment of Air Pollution	Non-adherence to clause 58.0	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
54.	Containment of water pollution and conservation of water	Non-adherence to clause 59.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
55.	Containment of noise and vibration	Non-adherence to clause 60.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
56.	Waste management	Non-adherence to clause 61.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
57.	Hazardous Waste Management	Non-adherence to clause 62.0	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance

58.	Environmental monitoring	Non-adherence to sub clause 63.2 & 63.3	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
59.		Non-adherence to sub clause 63.4, 63.5, 63.6, 63.7	Rs 25,000/- per single violation compounded to a maximum of Rs 1,25,000/- at any single instance
60.	Environment Sanitation	Non-adherence to clause 64.0	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance
61.	Archeological & Historical Preservation	Non-adherence to clause 66.0	Rs 50,000/- per single violation compounded to a maximum of Rs 2,50,000/- at any single instance

In cases of repetitive SHE violation over which penalty had already been imposed by the employer, penalty amount shall get double of the amount as imposed earlier or mentioned above.

70.1 In addition to above, if contractor fails to comply any of the clause of this document not mentioned in above table or statutory requirement/ or statutory legislations/standards practices, the employer shall have the right to impose penalty on unsafe acts or unsafe conditions based on the gravity of the situation/hazard and severity level. The penalty amount on such cases shall be in line with the category of violations to which non-compliance belongs.

70.2 It is the responsibility of main contractor to ensure compliance of the work being carried-out by their sub-contractors and all liability shall lie with the main contractor only by whom work is sublet. Contractor shall not transfer penalty which is imposed by employer on their sub-contractors.

70.3 Financial penalty as well as disciplinary action once taken, shall not waived-off in any circumstances.

71.0 Stoppage of work

(i) The Employer shall have the right to stop the work at his sole discretion, if in his opinion the work is being carried out in such a way that it may cause incident and endanger the safety and health wellbeing of site personnel or any public member or damaged to property/equipment as well as environmental degradation. Employer shall also have the right to stop the work if the contractor is working without license or has failed to complying provisions relating with wages, provident fund, ESI or other legal requirement for the workers.

(ii) The contractor shall not proceed with the work until he has complied with each direction to the satisfaction of Employer.

(iii) The Contractor shall not be entitled for any damages / compensation for stoppage of work, due to SHE reasons and the period of such stoppage of work shall not be taken as an extension of time for completion of the project/facilities and will not be the ground for waiver of levy of liquidated damages.

72.0 Disciplinary Actions

(i) Whenever, SHE violations observed at site especially for medium as well as high risk hazard, a written/verbal instruction for its early compliances shall be intimated by employer representative to contractor concerned representative i.e site engineer/in-charge under whom work is being performed.

(ii) In case of serious violation, warning letter shall be issued to concerned contractor's responsible person for its immediate compliance and non-repetition in future. In addition, contractor concerned head should deduct his one-day salary for such serious violations and again be send for appropriate training.

(iii) After training, if still violations observed at site under the control of same person to whom warning letter issued earlier, then a second warning letter with instruction of his possible demobilization from project shall be issued with recovery of two days' pay from his salary.

(iv) Despite second warning letter, if still there is not improvement or behavior change, the person shall be demobilized not only from particular project but from whole NCRTC project.

(v) The same thing is also applicable for their sub-contractors and contractor shall take similar action for SHE & welfare violation by their sub-contractor. If contractor fails to do, the same will be done by employer with financial penalty on contractor for allowing his sub-contractor not complying the employer or other statutory requirements.

73.0 SHE awards

(i) Apart from the disciplinary actions and financial penalty, if contractor shows their best efforts in ensuring compliance of SHE & welfare requirement and meet above the employer expectation and dedication towards safe work execution, contractor or his team may also be awarded appropriately by the employer and appreciation certificate may also be issued:

(a) Every safe million-man hour worked without any injury incidents (injury free period)
(b) Zero fatality project
(c) 100% adherence to voluntary reporting of all incidents throughout the currency of contract for continuous improvement in performance.
(d) Safest project of the year.
(e) Best SHE team of the year.
(f) Best statutory SHE, labour compliances and welfare facility

(ii) In additional, contractor should also frame procedure for awarding their own staff and worker for their sincere work towards ensuring SHE and Welfare practices compliance.

(iii) Contractor should also focus on enhancing their SHE performance through adoption of advance technologies.

Appendix – I

Memorandum of Understanding
between
National Capital Region Transport Corporation Ltd. (NCRTC) and the Contractor for Safe and Environment friendly execution of contract work

This Memorandum of Understanding is made and executed between National Capital Region Transport Corporation Ltd. (NCRTC). Company registered under the Companies Act 1956 and having its registered office at **7/6, AMDA Building, Siri Fort Institutional Area, August Kranti Marg, New Delhi - 110049** or their authorized representative(s), hereinafter referred to as "**EMPLOYER**" (which expression shall wherever the context so requires or admits be deemed to mean and include its successors in business and assigns) of the one party

AND

M/s_____having its registered office at _____ hereinafter referred to as the "**CONTRACTOR**" (which expression shall wherever the context so requires or admits be deemed to mean and include its successors in business and assigns) of the other party

WITNESS THAT

WHEREAS the EMPLOYER gives highest importance to the occupational safety, health and environment during execution of work, seeks cooperation from the CONTRACTOR in this endeavor.

Thus, this Memorandum of Understanding is for promoting the safety, health and environment aspects required to be followed at workplace/site and will be applicable to any site job to be done by the CONTRACTOR

AND

WHEREAS the CONTRACTOR has read all the terms and conditions of the EMPLOYER and whereas the CONTRACTOR has studied the following documents:

(i) Tender Documents, including Notice Inviting Tender, General Conditions, Special Conditions;
(ii) Employer's Requirement on Safety, Health and Environment;
(iii) Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996, Central Rules 1998 and subsequent BOCW Rules of concerned State/Union Territory, Building and Other Construction Workers Welfare Cess Act 1996 and Rules 1998 and notification [Central & State] Collection of cess.
(iv) Environment Protection Act, 1986 & rules
(v) Other statutory requirements (relevant acts & rules) on Safety, Health and Environment
(vi) Corresponding International / Bureau of Indian Standard Codes.

Including the amendments to any of the above rules and any other rules & regulations or procedures, circulars, notices & advices laid down by the Employer from time to time.

Now it is hereby AGREED AND DECLARED by and between the EMPLOYER and the CONTRACTOR as follows:

Clause – I The CONTRACTOR shall abide by the terms and conditions stipulated in Employer's

Requirement Safety, Health & Environment.

Clause – II The CONTRACTOR shall undertake full responsibility for safe execution of job at work place/site and safety of his personnel, adjoining road and structures along-with their users during work and the Contractor shall keep the Employer harmless and indemnified.

Clause – III Without giving any prior notice, the EMPLOYER shall from time to time be entitled to add/or amend any or all terms and conditions with a view to improving occupational safety and health of personnel and safety of work and improvement in environment conditions, with immediate effect and the same shall be binding on the CONTRACTOR. The Contractor agrees to implement all such amendments, which shall be laid down by the EMPLOYER.

Clause – IV Besides following the guidelines, SHE rules and regulations, safety codes given in various safety procedures/documents mentioned above, the CONTRACTOR shall also prepare detailed method statement which includes job safety analysis wherever there are complicated and hazardous/high risk working involved and get it approved from Employer before execution of work.

Clause – V Any negligence or violation in implementing any of the provision of the NCRTC Employer Requirement on Safety, Health & Environment and guidelines on Safety, Health & Environment shall be viewed seriously, and the Contractor is liable to compensate the Employer for the loss of reputation. The cost of damage shall be fixed on case-to-case basis.

In witness thereof the Parties hereto by representatives duly authorised have executed this Memorandum of Understanding on_____day of_____20____.

For and on behalf of NCRTC

Signature:
Name:
Designation:
Official Stamp:

For and on behalf of (Contractor)

Signature:
Name:
Designation:
Official Stamp:

Appendix – II

Contents of Contractor Safety, Health and Environment Plan

1.0 Project highlights

2.0 Key definitions

3.0 Leadership and worker participation

- 3.1 Leadership and commitment
- 3.2 SHE Policy
- 3.3 Roles, responsibilities and authorities
- 3.4 Consultation and participation of staff/workers

4.0 Planning

- 4.1 Hazard Identification and assessment of risks and opportunities
- 4.2 Applicable legal requirements and other requirements
- 4.3 Action plan to achieve compliance
- 4.4 SHE objectives and planning to achieve them

4.0 Support

- 4.1 Resources deployment
- 4.2 Process for assessing and ensuring competence level of staff/workers through training and other arrangements
- 4.3 Process for creating awareness among staff/workers/families/general public
- 4.4 Process for effective and efficient communication among staff and workers and other interested parties
- 4.5 Permit to work system
- 4.6 SHE organisation
- 4.7 Documentation, updation and control

5.0 Operation

- 5.1 Process for elimination of hazards and reduction in SHE risks
- 5.2 Process for implementation & control of planned temporary and permanent changes that impact SHE performance
- 5.3 Process for controlling the procurement of product & services
- 5.4 Health, Welfare & Environment provisions
- 5.5 Visitors at site and security arrangements
- 5.6 Emergency preparedness & response plan

6.0 Performance evaluation

- 6.1 Process for monitoring, measurement, and analysis and performance evaluation
- 6.2 Process for SHE committee meetings
- 6.3 SHE Audits
- 6.4 Site Inspections
- 6.5 Process for review of SHE management system by Management

7.0 Improvement

7.1 Incident reporting & Investigation and preventive/corrective actions

7.2 Process for continual improvement

8.0 Enclosures:

8.1 Standard Operating Procedures

8.2 Checklist

8.3 Sample Forms

NOTE: Standard Operating Procedure should be prepared for all work activities proposed to be performed at site

Appendix – II (A)

Contents of Contractor Environment Plan

S. No.	Site Environmental Plan Outline
1	**GENERAL**
(i)	The Environmental Policy of the Contractor is clearly defined in the Site Environmental Plan, which, inter-alia, commits the Contractor to follow national and state environmental legislation and regulations.
(ii)	The person responsible for day-to-day environmental matters is identified and vested with authority to execute the Site Environmental Plan. The Contractor has environmental lines of communication.
(iii)	Procedure is available for Contractor's system of enforcing good environmental practices of its Sub-contractor. By procedure it is implied that the Sub Contractor has been given clear written directions to comply with all requirements mentioned in this document and as applicable.
(iv)	The Site Environmental Plan contains procedures for screening material used in the contract, for their environmental friendliness. This implies that the procedure will comply with MC2 and MC 3 credits of IGBC Green Mass Rapid System (MRTS).
2	**ENVIRONMENT FRIENDLY CONSTRUCTION PRACTICES**
(i)	The Site Environmental Plan shall contain specific procedures for achieving environmental performance requirements as given in the Employer's requirements on Environment.
(ii)	Procedures for carrying out Aspect/Impact analysis of contractor are proposed works and their effect on environment. This will be cross reference with ISO 14001:2015 (EMS) procedures.
(iii)	Procedures for setting up Objectives and Targets commensurate with Employer's requirement on Environment and how these shall be met.
(iv)	Procedures for formulating Environmental Management Plans and Operational Control Procedures to meet contractual requirements.
(v)	Procedures for offering environmental training and methods for promoting environmental awareness amongst his employees.
(vi)	The Site Environmental Plan must contain details on Air Monitoring and Control Plan which details Mitigation measures / Corrective Action / Preventive Action and Monitoring Schedule.
(vii)	The Site Environmental Plan must contain details on Noise Monitoring and Control Plan which details Mitigation measures / Corrective Action / Preventive Action and Monitoring Schedule.
(viii)	The Site Environmental Plan must contain procedures on prevention and control of water pollution from sanitary surface runoff and process wastewater.
(ix)	The Site Environmental Plan must contain details on procedures for Storage, handling and disposal of waste including, Municipal, C&D, Plastic, Bio-Medical, Chemical and Hazardous wastes.
(x)	The Site Environmental Plan must contain procedures for reuse/recycle of waste, selling to authorised recyclers and records thereof.
(xi)	The Site Environmental Plan must contain procedures for preservation of landscape disturbed due to construction, housekeeping/Environmental Sanitation and traffic management as required under the contract.
(xii)	The Site Environmental Plan must contain procedures for dealing with unforeseen environmental situations under Environmental Emergency.

3	**MONITORING, AUDITS AND RECORDS**
(i)	The Site Environmental Plan shall contain the environmental monitoring requirements as per the contract requirements.
(ii)	The Contractor keeps records of environmental monitoring and the Site Environmental Plan must contain provision for reporting results of environmental monitoring in a manner as specified in this document.
(iii)	The Site Environmental Plan must contain procedures for carrying out inspections
(iv)	The Site Environmental Plan must contain provisions for submitting monthly Environmental Management reports.
(v)	The Site Environmental Plan must contain procedures for recording environmental complaints and response process.

Appendix – III

Manpower requirements: SHE organization for Civil, Track, Finishing Contracts

S. No.	Designation	Deployment Criteria/Requirement based on work fronts
1.	**Chief SHE Manager**	(i) Chief SHE Manager shall be mobilise within four weeks of time from LOA. (ii) In case of PEB/Track/Architectural finishing work, Chief SHE Manager shall be mobilise whenever, contract scope of work exceeds more than two stations or viaduct of more than 6 kms.
2.	**Sr. SHE Manager**	(i) At least one Sr. SHE Manager shall be mobilise within four weeks of time from LOA and additional based on available work fronts. (ii) At least one Sr. SHE Manager shall be mobilise for every two stations and separately on every 3 kms of viaduct in each shift. (iii) At least one Sr. SHE Manager shall be mobilise for every tunnelling work (limited to 2 TBMs/Tunnel), casting yard, launching (limited to 3 launchers), complex lifting works etc. in each shift. (iv) In case of depot work or any other work involving limited work area, Sr. SHE Manager may act as Chief SHE Manager. However, based on work profile, if employers seem the requirement of Chief SHE Manager is necessitate, Contractor shall mobilise the same in addition to Sr. SHE Manager and other safety staff. ***The above deployment criteria of Sr. SHE Manager are uniform for all type of contracts.***
3.	**Jr. SHE Manager**	(i) At least one Jr. SHE Manager shall be mobilise within eight weeks of time from LOA and additional based on available work fronts. (ii) At least one Jr. SHE Manager shall be mobilise at each station, launching & retrieval shaft including single tunnel, casting yard, batching plant, launching girder, lifting etc. & in each shift and separately on every 1 kms of viaduct in each shift. ***The above deployment criteria of Jr. SHE Manager are uniform for all type of contracts.***
4.	**Safety Steward/Supervisor**	(i) At least one Safety steward/supervisor shall be mobilise along with Jr. SHE Manager at that particular site in each shift. However, additional safety steward may also be deployed based on work requirement. (ii) In case of /Track contract, safety steward/supervisor should be deployed wherever work is performed.

5.	**Sr. Fire Manager**	Sr. Fire Manager shall be mobilise within eight weeks of time from LOA.
6.	**Jr. Fire Manager**	At least one Jr. Fire Manager shall also be mobilise along with Sr. Fire Manager in each shift.
7.	**Construction Medical Officer**	(i) One Construction Medical Officer along with required nurse shall be mobilise within four weeks of time from LOA in both day and night shift. (ii) He should be mobilise on full time basis. However, when a small work is awarded and limited to single station/depot/boundary wall, medical officer on part time basis may be mobilise.
8.	**First-aider**	One first aider shall be mobilise at each site and in each shift.
9.	**Traffic Manager**	Traffic shall be mobilise within four weeks of time from LOA.
10.	**Labour Welfare Officer**	Labour Welfare Officer shall be mobilise within four weeks of time from LOA.
11.	**Sr. Electrical Engineer**	Sr. Electrical Engineer shall be mobilise within four weeks of time from LOA.
12.	**Jr. Electrical Engineer**	Jr. Electrical Engineer shall be mobilise as per Jr. SHE Manager mobilisation schedule
13.	**Electrician**	One Electrician shall be mobilise at each site and in each shift
14	**Sr. Environment Manager**	One Sr. Environmental Manager shall be mobilise within four weeks of time from LOA
15	**Jr. Environment Manager**	Al least one Jr. Environmental Manager shall be mobilise along with Sr. Environmental Manager

Note – 1: Housekeeping shall be look after by respective site engineer and ensured that good housekeeping is maintained throughout the project.

Note – 2: Barricading shall be looking after by Traffic Manager along with respective site engineer.

Note – 3: In addition to above deployment; based on work activity, if employer seems additional requirement of staff, contractor shall mobilize the same within 14 days of time.

Note – 4: In case when staff is on leave for short term duration, contractor should ensure at least one safety staff shall be available at worksite at all time of work.

Note – 5: In case of PEB/track/finishing contractors; deployment of Traffic Manager & Sr. Environment Manager may not necessitate but based on site conditions, if employer seem that such position is must, same shall be mobilize immediately.

Note – 6: In case of PEB, track, finishing contractors, the experience required for the post of Chief SHE Manager/Sr. SHE Manager may be relaxed which will be decided by the employer only. However, person deployed should meet the educational criteria and should have exposure in similar type of work.

Appendix-III (A)

Manpower requirements: SHE Organization for Electrical, S&T & other system wide Contracts

S. No.	Designation	Deployment Criteria/Requirement based on work fronts
1.	Chief SHE Manager	One Chief SHE Manager shall be mobilized within four weeks of time from LOA.
2.	Sr. SHE Manager	One Sr. SHE Managers shall be mobilized within four weeks of time from LOA and another based on work fronts. However, contractor shall mobilize one each for viaduct and station.
3.	Jr. SHE Manager	At least one Jr. SHE Manager shall be mobilized for every four stations including viaduct/tunnel in each shift within eight weeks of time from LOA and additional based on available work front.
4.	Safety Steward/ Supervisor	One safety steward/supervisor shall be deployed at every site and in each shift wherever work is performed.
5.	Sr. Fire Manager	One Sr. Fire Manager shall be mobilized within eight weeks of time from LOA.
6.	Jr. Fire Manager	One Jr. Fire Manager shall be mobilized along with Sr. Fire Manager within eight weeks of time from LOA.
7.	Construction Medical Officer	One Construction Medical Officer along with required nurse shall be mobilized within four weeks of time from LOA on part time basis.
8.	First-aider	One First aider shall be nominated after training out of staff working at each site and in each shift.
9	Labour Welfare Officer	Labour Welfare Officer shall be mobilized within four weeks of time from LOA.
10.	Sr. Electrical Safety Engineer	One Sr. Electrical Engineer shall be nominated out of working Sr. Electrical Engineers to work for SHE organization. He should have appropriate training & certification in Electrical Safety.
11	Jr. Electrical Safety Engineer	One Jr. Electrical Engineer shall be nominated out of working Jr. Electrical Engineers to work for SHE organization. He should have appropriate training & certification in Electrical Safety.
12.	Electrician Safety	One Electrician shall be nominated out of working Electricians to work for SHE organization at each site and in each shift. He should have appropriate training/certification in Electrical Safety.
13	Jr. Environment Manager	Environmental Manager shall be mobilise within four weeks of time from LOA.

Note -1: Housekeeping shall be looking after by respective Site Engineer and shall ensure good housekeeping throughout the project.

Note - 2: Barricading and Traffic Management shall be looked after by respective Site Engineer. However, Chief SHE Manager should be consulted for appropriate safety measures to be ensured while

barricading/Traffic Management measures.

Note - 3: In addition to above deployment; based on work activity, if employer seems additional requirement of any staff as listed above, contractor shall mobilize the same within 14 days of time.

Note - 4: In case when staff is on leave for short term duration, contractor should ensure at least one safety staff shall be available at worksite at all time of work.

Note -5: The total experience required for the post of Chief SHE Manager/Sr. SHE Manager may be relaxed, if required which shall be decided by the employer on case to case basis. However, person deployed should meet the educational criteria and should have exposure in similar type of work.

Note - 6: Contractor should also mobilize separate Jr. SHE Manager and Safety steward/Supervisor for depot and other similar works.

Note - 7: Contractor shall deploy at least one dedicated advance life-support Ambulance, which will be stationed at the site where critical work is going on. In addition, vehicle should always be available at various sites which can be utilised in case of emergency.

Appendix – IV

Qualification & Experience of SHE professionals

S. No	Designation	Qualification	Experience (in years)
1.	**Chief SHE Manager**	(i) Regular B.E/B. Tech in Engineering* along with one-year full time/regular Degree / Diploma in Industrial Safety from a recognized institution/body approved by central/state government bodies. **or** (ii) Regular M.E/M.Tech in Industrial Safety from a recognized institution/body approved by central/state government bodies. **or** (iii) Regular 3 years Diploma in Engineering along with one-year regular Degree / Diploma in Industrial Safety from a recognized institution/body approved by central/state government bodies. *Desirable: Engineering disciplines - Civil/Mechanical/ Electrical Engineering and Diploma in Environment field	Minimum 10 years for category (i & ii); and 15 years for category (iii) At least 5-year experience for (i & ii) and 8 yrs for (iii) in similar type of project. In addition, at least 3 yrs experience on similar post.
2.	**Senior SHE Manager**	(i) As stated in S. No.1 **or** (ii) Regular diploma in Engineering with one-year regular Degree / Diploma in Industrial Safety from a recognized institution/body approved by central/state government bodies. **or** (iii) B.Sc. with one-year regular Degree / Diploma in Industrial Safety from a recognized institution/body approved by central/state government bodies. *Desirable Engineering disciplines - Civil/Mechanical/ Electrical Engineering	Minimum 5 years for category (i) except (1.iii) for which it should be of 7 years; 7 years for category (ii); and 10 years for category (iii) At least 4-year experience in similar type of project.
3.	**Junior SHE Manager**	(i) As stated in S. No.1 **or** (ii) As stated in S. No. 2 **or** (iv) Any other full time/regular Graduation along with one-year full time/regular Degree / Diploma in Industrial Safety from a recognized institution/body approved by central/state government bodies.	Minimum 2 years for category (i); 5 years of category (ii) and 7 years for category (iii)
4.	**Safety Steward/Supervisor**	Senior Secondary School qualified with minimum Six months duration Certificate Course in Industrial Safety.	1 year in SHE field construction sector

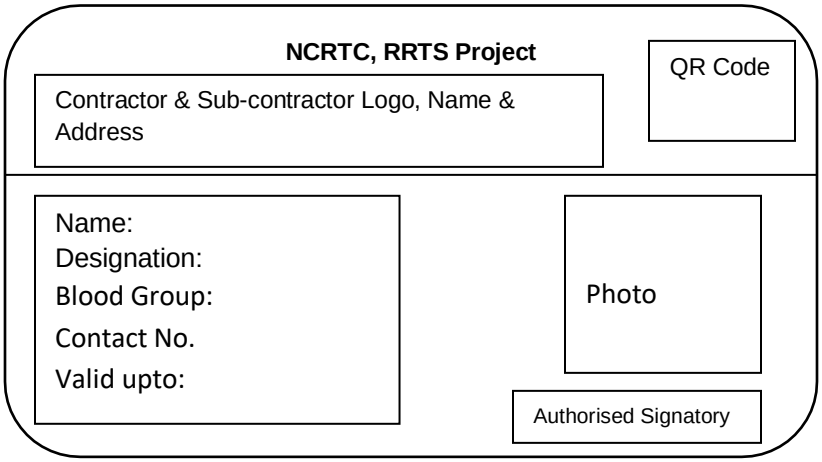
5.	**Sr. Fire Manager**	(i) B.E. in Fire from recognized University/Institution **or** (ii) Regular three years duration Diploma in Engineering with one-year diploma in fire safety from a central/state govt. recognised institution/body **or** (iii) Graduation along with one year Diploma in Fire Safety from central/state govt. recognized institution/body	5 years for category (i); 7 years for category (ii); and 10 years for category (iii)
6.	**Jr. Fire Manager**	(i) B.E. in Fire from recognized University/Institution **or** (ii) Regular three years duration Diploma in Engineering with one-year diploma in fire safety from a central/state govt. recognised institution/body **or** (iii) Graduation along with one-year Diploma in Fire Safety from central/state govt. recognized institution/body	3 years for category (i); 5 years for category (ii); and 7 years for category (iii
7.	**Construction Medical Officer**	MBBS with Govt. recognized degree/diploma in Industrial/ occupational health	1 years in construction sector
8.	**Male Nurse**	Any graduate with certificate/diploma in nursing	1 year in construction sector
9.	**First-aider**	Any graduation with certificate in first aid	1 year in construction sector
10.	**Traffic Manager**	Degree / Diploma in Traffic/Transportation Engineering or Planning	2 years in construction sector
11.	**Labour Welfare Officer**	Any graduation/degree with Govt. recognized Diploma in Labour Welfare related fields like Law, Personnel / Industrial Relations etc.	2 years in construction sector
12.	**Sr. Electrical Engineer**	Degree in Electrical Engineering Govt. recognized Electrical License holder	7 years in construction sector
13.	**Jr. Electrical Engineer**	Full Time regular three years duration Diploma in Electrical Engineering + Govt. recognized Electrical License holder	3 years in construction sector
14.	**Electrician**	ITI/Diploma in electrical engineering along with Govt. recognized Electrical License holder	2 years in construction sector
15.	**Sr. Environment Manager**	(i) B.E./B.Tech in Engineering with Post Graduation/ Diploma in Environment from a recognized institution/body **or** (ii) B.Sc with M.Sc in Environment Science from a recognized institution/body	3 years for category (i); and 4 years for category (ii) in construction sector
16.	**Jr. Environment Manager**	(i) B.E./B.Tech in Engineering with Post Graduation/ Diploma in Environment from a recognized institution/body **or** (ii) B.Sc with M.Sc in Environment Science from a recognized institution/body	1 years for category (i); and 2 years for category (ii) in construction sector

Appendix – V

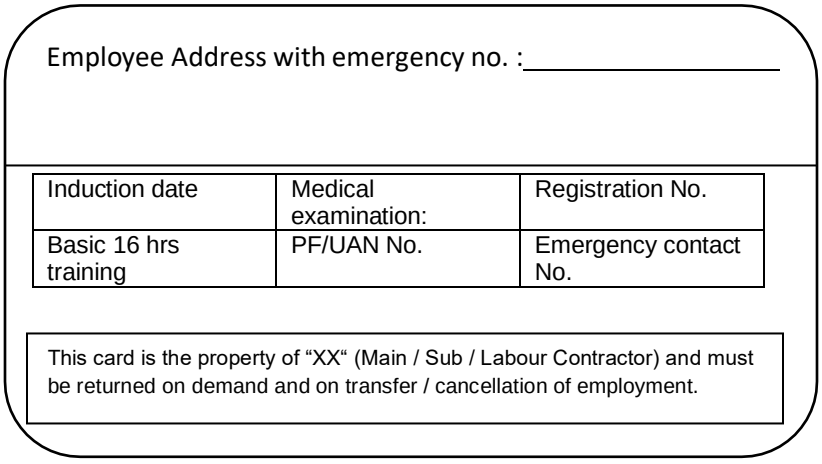
Identification Card

Size: 85 mm x 55mm

Front side of ID Card:



Backside of ID card:



Appendix – VI

List of Expert Agencies/firms for SHE services

	Category A: ISO 45001: 2018 and ISO 14001: 2015 EMS Certifications	
Sr. No	**Agency Name**	**Contact Details**
1.	M/s ASR Certification Services Pvt. Ltd. M 36, Sham Nagar, Delhi – 110018	Mr. S. Grover Ph – 9811656039 Email –asrcertification@asrceretification.com
2.	M/s RINA B – 607-608, Everest Chamber, Marol, Andheri East, Mumbai – 400059	Mr. Thomas Alocious Fernandez Phone No. 9619252595, 022-61113333 Email - thofe@rina.org
3.	M/s Quality Systems Engg. 110A, Chitranjan Park, Sadar, Meerut, Uttarpradesh	Mr. Arshad Khan M/s Quality Systems Engg. 110A, Chitranjan Park, Sadar, Meerut, Uttarpradesh Ph – 01212651249 E-Mail – arshad@qse.co.in
	Category B: External Health and Safety Audits and External Environment Audit	
	B1: External Health and Safety Audits	
1.	M/s Quality Growth Services Pvt. Ltd. H-13, 2nd floor, Kirti Nagar, New Delhi – 110015	Mr. P. K Pasricha Ph – 011-25431737/25918332 Email – qgs@qgspl.com, praveen@qgspl.com
2.	M/s ENSIGN Safety Academy & Consultant Pvt. Ltd. 2ndFloor, Shuja Arcade, Railway Station Road, Edappilly, Ernakulam,Kerala-682024	Mr.V. S. Aniklumar Ph – 04846068538, 9947218538 Email :anilsafety49@yahoo.in ensignsafety@gmail.com
3.	M/s Shelp Consultant 241/242, L – Ext., Mohan Garden, Uttam Nagar, New Delhi – 110059	Mr. S K Sharma Mob No. 9717273812 Email – sudheshsharma01@gmail.com
4.	M/s Salus EHS Solutions Pvt. Ltd. 23/1, Raipur Road, Near Back gate of Brightford School, Dehradun, Uttrakhand – 248001 Ph –05944-249022	Mr. S. R. Singh Ph. No. 8527662096, 7454800641 E-mail: shvrmsingh714@gmail.com
5.	M/s Lok Bharti Skilling Solutions Pvt. Ltd. 304, Skylane House, 85, Nehru Place, Dist – South Delhi, New Delhi – 110019	Mr. Arun Bhutani Ph – 01146546161 Email – arun.bhutani@lokbharti.ac.in
6.	M/s Allied Boston Consultants India Pvt. Ltd. A-2/60, 2nd Floor, Shiv Arcade, Acharya Niketan, Mayur Vihar Phase – 1 Delhi-110091	Mr. Vishal Khosla, Ph: 011-22792467 info@abcipl.co.in
7.	The Centre for Safety Management, SB-184,Anandam NTPC Housing Society, Sector P-6, Greater Noida (NCR), GB Nagar District, U.P (NCR)- 201308	Mr. A. B. Lal Ph:9650992726 Email:ashokblal@gmail.com

8.	M/s Vibgyor Consulting 51-A, Ashok Vatika, Sahibabad, Ghaziabad, Uttarpradesh – 201005	Mr. Anand Ph – 8076625600 E-Mail ID – info@vibgyorconsultant.com
9.	M/s Industrial Safety Development Council 59/2/2, Site – IV, Sahibabad Industrila Area, Ghaziabad UP – 201010	Mr. S. Barnwal Ph – 9555520299 info@isdcouncil.com sunil.barnwal@isdcouncil.com
10.	M/s Quality Austria Central Asia 52B, Okhla Industrial Area, Phase – 3, New Delhi – 110020	Mr. A. Murjani Ph – 01146465100 Email – anil.murjani@qacamail.com
11.	M/s URS Verification Pvt. Ltd. F-3, Sector – 6, Noida – 201301	Mr. A. Kumar Ph – 0120-6404223 Email – ashok.delhi@urs-climate.com
	B2: External Environment Audit	
1.	M/s Global Safety Solution Sector – 7/37, Dividing Road, Near Petrol Pump, Barsi Nagar, Jind Bye-Pass, Rohtak, District – Rohtak, Haryana – 124001,	Mrs Mamta Ph no. 01262 – 601001 , Mobile No.– 8816066680 Email – globalsafetysolutions.she@gmail.com
2.	M/s Quality Systems Engg. 110A, Chitranjan Park, Sadar, Meerut, Uttarpradesh	Mr. Arshad Khan Ph – 01212651249 E-Mail – arshad@qse.co.in
3.	M/s EQMS India Pvt. Ltd. 304-305, III floor, Risabh Tower, Plot No. 16, Community Centre, Karkardooma, Delhi-110092	Mr. S K Jain Mob. 011 3000 3200, E Mail – skjain@eqmsindia.org
4.	M/s Vibgyor Consulting 51-A, Ashok Vatika, Sahibabad, Ghaziabad, Uttarpradesh – 201005	Mr. Anand Ph – 8076625600 E-Mail ID – info@vibgyorconsultant.com
5.	M/s TUV India Pvt Ltd B-3, 1st Floor, Sector – 7, Noida – 201301	Mr. P. Gupta Mob. No. 09971024346 Email – punkaj@tuv-nord.com
6.	M/s Quality Austria Central Asia 52B, Okhla Industrial Area, Phase – 3, New Delhi – 110020	Mr. A. Murjani Ph – 01146465100 Email – anil.murjani@qacamail.com
7.	M/s URS Verification Pvt. Ltd. F-3, Sector – 6, Noida – 201301	Mr. A. Kumar Ph – 0120-6404223 Email – ashok.delhi@urs-climate.com
8.	M/s RINA B – 607-608, Everest Chamber, Marol, Andheri East, Mumbai – 400059	Mr. Thomas Alocious Fernandez Phone No. 9619252595, 022-61113333 Email - thofe@rina.org
9.	M/s REES Consultant 96, Anupam Apartment, M B Road, New Delhi – 110068	Mr. S. Chowdhry Ph – 9899271144 Email – ressconsultant@gmail.com, chowdhrysidharth@gmail.com
10.	M/s The Target C-22, Manas Apartment, Mayur Vihar Phase – I Ext., Delhi – 110091	Mr. K T Chandramohan Ph – 09711737345 mail – ktchandramohan@gmail.com

	Category C: Safety & Health and Environment Training	
	C1: Safety & Health Training	
1.	M/s Global Health, Safety & Infra Const T-1/901, Unitech Height, CHI-3, Greater Noida – 201310,Uttar Pradesh	Mr. M. Chandra Ph – 0120-4314965 Email: maheshk.chandra@yahoo.co.in,globalhsic@gmail.com
2.	M/s Renyge Technologies H-13, 2nd floor, Kirti Nagar, New Delhi – 110015	Mr. T. Venkataraman Ph – 01125918332 Email – renyget@gmail.com
3.	M/s Quality Growth Services Pvt. Ltd. H-13, 2nd floor, Kirti Nagar, New Delhi – 110015	Mr. P. K. Pasricha Ph – 011-25431737/25918332 Email – qgs@qgspl.com, praveen@qgspl.com
4.	M/s ENSIGN Safety Academy & Consultant Pvt. Ltd. 2ndFloor,Shuja Arcade, Railway Station Road, Edappilly, Ernakulam,Kerala-682024	Mr.V. S. Aniklumar Ph – 04846068538, 9947218538 Email :anilsafety49@yahoo.in ensignsafety@gmail.com
5.	M/s Shelp Consultant 241/242, L – Ext., Mohan Garden, Uttam Nagar, New Delhi – 110059	Mr. S K Sharma Mob No. 9717273812 Email – sudheshsharma01@gmail.com
6.	M/s Salus EHS Solutions Pvt. Ltd. 23/1, Raipur Road, Near Back gate of Brightford School, Dehradun, Uttrakhand – 248001 Ph –05944-249022	Mr. S. R. Singh Ph. No. 8527662096, 7454800641 E-mail: shvrmsingh714@gmail.com
7.	M/s Lok Bharti Skilling Solutions Pvt. Ltd. 304, Skylane House, 85, Nehru Place, Dist – South Delhi, New Delhi – 110019	Mr. Arun Bhutani Ph – 01146546161 Email – arun.bhutani@lokbharti.ac.in
8.	M/s Labour Net Services India Pvt. Ltd. B-28, 3rd Floor, Sector – 1, Noida – 201301	Mr. Vivek Singh Ph – 9108520948 Email – vivek.singh@labournet.in
9.	M/s Allied Boston Consultants India Pvt. Ltd. A-2/60, 2nd Floor, Shiv Arcade, Acharya Niketan, Mayur Vihar Phase – 1 Delhi-110091	Mr. V Khosla, Ph: 011-22792467 info@abcipl.co.in
10.	M/s The Centre for Safety Management, SB-184,Anandam NTPC Housing Society, Sector P-6, Greater Noida (NCR), GB Nagar District, U.P (NCR)- 201308	Mr.A. B. Lal Ph:9650992726 Email:ashokblal@gmail.com
11.	M/s SHE Integro Pvt Ltd Off No. 16, Ground Floor, Evershine Mall, Behind Space Malad West Mumbai – 400064	Mr. Anant Singh, Mob. No. 9967192044 Email – anant.songh@SHEintegro
12.	M/s Arbrit Safety & Engineering Solutions Pvt. Ltd. Building No: 34/583B,Jolly Tower ,Civil Lane Road, Padivattam,Edapally,Cochin, Distt. Ernakulam,Kerala-682024	Mr. Arun Kumar Ph – 0484-2102898/2753060, 9447063682 Email: info@arbitonline.com arun@arbitonline.com

13.	M/s Global Safety Solution Sector – 7/37, Dividing Road, Near Petrol Pump, Barsi Nagar, Jind Bye-Pass, District – Rohtak, Haryana – 124001,	Mrs Mamta Ph no. 01262 – 601001 , Mobile No.– 8816066680 Email – globalsafetysolutions.she@gmail.com
14.	M/s Vibgyor Consulting 51-A, Ashok Vatika, Sahibabad, Ghaziabad, Uttarpradesh – 201005	Mr. Anand Ph – 8076625600 E-Mail ID – info@vibgyorconsultant.com
15.	M/s Industrial Safety Development Council 59/2/2, Site – IV, Sahibabad Industrila Area, Ghaziabad UP – 201010	Mr. Sunil Barnwal Ph – 9555520299 info@isdcouncil.com sunil.barnwal@isdcouncil.com
16.	M/s URS Products & Testing Pvt.Ltd. F-3, Sector – 6, Noida – 201301	Mr. Anku Sangal Ph – 01206404223 Email – ankur@ursindia.com
17.	M/s Quality Austria Central Asia 52B, Okhla Industrial Area, Phase – 3, New Delhi – 110020	Mr. Anil Murjani Ph – 01146465100 Email – anil.murjani@qacamail.com
	C2: Environment Training	
1.	M/s SHE Integro Pvt Ltd Off No. 16, Ground Floor, Evershine Mall, Behind Space Malad West Mumbai – 400064	Mr. Anant Singh, Mob. No. 9967192044 Email – anant.songh@SHEintegro
2.	M/s Quality Systems Engg. 110A, Chitranjan Park, Sadar, Meerut, Uttarpradesh	Mr. Arshad Khan Ph – 01212651249 E-Mail – arshad@qse.co.in
3.	M/s URS Products & Testing Pvt.Ltd. F-3, Sector – 6, Noida – 201301	Mr. Anku Sangal Ph – 01206404223 Email – ankur@ursindia.com
4.	M/s EQMS India Pvt. Ltd. 304-305, III floor, Risabh Tower, Plot No. 16, Community Centre, Karkardooma, Delhi-110092	Mr. S K Jain Mob. 011 3000 3200, E Mail – skjain@eqmsindia.org
5.	M/s Shelp Consultant 241/242, L – Ext., Mohan Garden, Uttam Nagar, New Delhi – 110059	Mr. S K Sharma Mob No. 9717273812 Email – sudheshsharma01@gmail.com
6.	M/s Vibgyor Consulting 51-A, Ashok Vatika, Sahibabad, Ghaziabad, Uttar pradesh – 201005	Mr. Anand Ph – 8076625600 E-Mail ID – info@vibgyorconsultant.com
7.	M/s TUV India Pvt Ltd B-3, 1st Floor, Sector – 7, Noida – 201301	Mr. Pankaj Gupta Mob. No. 09971024346 Email – punkaj@tuv-nord.com
8.	M/s Quality Austria Central Asia 52B, Okhla Industrial Area, Phase – 3, New Delhi – 110020	Mr. Anil Murjani Ph – 01146465100 Email – anil.murjani@qacamail.com
9.	M/s Lok Bharti Skilling Solutions Pvt. Ltd. 304, Skylane House, 85, Nehru Place, Dist – South Delhi, New Delhi – 110019	Mr. Arun Bhutani Ph – 01146546161 Email – arun.bhutani@lokbharti.ac.in
10.	M/s REES Consultant 96, Anupam Apartment, M B Road, New Delhi – 110068	Mr. Sidharth Chowdhry Ph – 9899271144 Email – ressconsultant@gmail.com, chowdhrysidharth@gmail.com

11.	M/s Global Safety Solution Sector – 7/37, Dividing Road, Near Petrol Pump, Barsi Nagar, Jind Bye-Pass, Rohtak, District – Rohtak, Haryana – 124001,	Mrs Mamta Ph no. 01262 – 601001 , Mobile No.– 8816066680 Email – globalsafetysolutions.she@gmail.com
12.	M/s RINA B – 607-608, Everest Chamber, Marol, Andheri East, Mumbai – 400059	Mr. Thomas Alocious Fernandez Phone No. 9619252595, 022-61113333 Email - thofe@rina.org
13.	M/s The Target C-22, Manas Apartment, Mayur Vihar Phase – I Ext., Delhi – 110091	Mr. K T Chandramohan Ph – 09711737345 mail – ktchandramohan@gmail.com
	Category D: Testing & Certifications of Cranes, Lifting gears, lifting tools & tackles and other construction machines and pressure vessels	
1.	M/s COGS Associates C-232, 3rd Floor, Palam Vyapar Kendra, Palam Vihar, Gurugram – 122017	Dr. K K Agrawal Ph – 9910393591 Email – rajbitindia@gmail.com
2.	M/s Intenco Engg. Certification LLP K-10, South Extension – 2, New Delhi – 110049	Mr. Varun Bhilhotra Ph –9910619566 Email -info@intenco.in
3.	M/s ShivamEnggineering Services WZ-13E, Gali No 4, Vashisthpark, Pankha Road, New Delhi – 110046	Mr. Rajan Kumar Ph – 011-28523688 Email – s.kec@rediffmail.com
4.	M/s Boss Technical Services A – 2/295, Pankha Road, New Delhi – 110058	Mr. Sarabjeet Singh Makkar Ph - 9811144107, Email – sarabjeet@bosstechnical.com
5.	M/s K R Technosafe Engineers, Plot No-9,Shaheed Nagar Colony, Raibareilly Road, Lucknow – 226025	Mr. A. K. Tiwari Mob. No. 9839135093, Email –krtelko@gmail.com
6.	M/s K R Bedmutha Techno Associates Pvt. Ltd. A-2A/120, Janakpuri, New Delhi Distt. West Delhi- 110058	Mr. M. K. Pandey Tel. No 011-25504438 Mobile No 09313464403 E-mail: delhi@krbta.co.in Email : mkpandey@krbta.co.in
7.	M/s Meenal Engineers & Consultants F-401, Sector – 17, Vasundhara, Ghaziabad – 201012	Mr. P. K. Bansal Mob. No. 9811514223, 01204101552 Email – pkbansal@meenalengineers.com
8.	M/s Er. S C Joshi Associates 1, Tej Mandi Station Road, Alwar, Rajastha – 301001	Mr. P. K. Singh Mob. No. 9783694136 Email – praveen8771@gmail.com
	Category E: Job Specific Training like lifting operation, temporary works including scaffolding and other associated subjects in safety	
1.	M/s Intenco Engg. Certification LLP K-10, South Extension – 2, New Delhi – 110049	Mr. Varun Bhilhotra Ph –9910619566 Email -info@intenco.in
2.	M/s Boss Technical Services A – 2/295, Pankha Road, New Delhi – 110058	Mr. S. S. Makkar Ph - 9811144107, Email – sarabjeet@bosstechnical.com
3.	M/s ENSIGN Safety Academy & Consultant Pvt. Ltd. 2ndFloor,Shuja Arcade, Railway Station	Mr.V. S. Aniklumar Ph – 04846068538, 9947218538 Email :anilsafety49@yahoo.in

	Road, Edappilly, Ernakulam,Kerala-682024	
4.	M/s Shelp Consultant 241/242, L – Ext., Mohan Garden, Uttam Nagar, New Delhi – 110059	Mr. S K Sharma Mob No. 9717273812 Email – sudheshsharma01@gmail.com
5.	M/s Labour Net Services India Pvt. Ltd. B-28, 3rd Floor, Sector – 1, Noida – 201301	Mr. V. Singh Ph – 9108520948 Email – vivek.singh@labournet.in
6.	The Centre for Safety Management, SB-184,Anandam NTPC Housing Society, Sector P-6, Greater Noida (NCR), GB Nagar District, U.P (NCR)- 201308	Mr. A. B. Lal Ph:9650992726 Email:ashokblal@gmail.com
7.	M/s Arbrit Safety & Engineering Solutions Pvt. Ltd. Building No: 34/583B,Jolly Tower ,Civil Lane Road, Padivattam,Edapally,Cochin, Distt. Ernakulam,Kerala-682024	Mr. Arun Kumar Ph – 0484-2102898/2753060, 9447063682 Email: info@arbitonline.com arun@arbitonline.com
8.	M/s Vibgyor Consulting 51-A, Ashok Vatika, Sahibabad, Ghaziabad, Uttarpradesh – 201005	Mr. Anand Ph – 8076625600 E-Mail ID – info@vibgyorconsultant.com
9.	M/s Industrial Safety Development Council 59/2/2, Site – IV, Sahibabad Industrila Area, Ghaziabad UP – 201010	Mr. Sunil Barnwal Ph – 9555520299 info@isdcouncil.com sunil.barnwal@isdcouncil.com
10.	M/s Quality Austria Central Asia 52B, Okhla Industrial Area, Phase – 3, New Delhi – 110020	Mr. Anil Murjani Ph – 01146465100 Email – anil.murjani@qacamail.com

Agencies empanelled under category C-2 are also eligible for undertaking Job Specific Training on Environmental issues.

The above list of agencies for providing SHE services may be revised at later stage and contractor shall obtain services from the revised agencies.

Appendix – VII

Qualification & Experience of SHE Trainer/Auditor/Competent Person

S. No	Designation	Qualification	Experience (in years)
1.	**SHE Trainer (for staff)**	(i) Degree in Engineering with one-year regular diploma course in Industrial safety from recognised institution/body **or** (ii) Diploma in Engineering with one-year regular diploma course in Industrial safety from recognised institution/body **or** (iii) B.Sc with one year regular diploma course in Industrial Safety from recognised institution/body	5 years for category (i); 7 years for category (ii); and 10 years for category (ii)
2.	**SHE Trainer (for workers)**	(i) Degree in Engineering with one-year regular diploma course in Industrial safety from recognised institution/body **or** (ii) Diploma in Engineering with one-year regular diploma course in Industrial safety from recognised institution/body **or** (iii) B.Sc with one year regular diploma course in Industrial Safety from recognised institution/body	2 years for category (i); 5 years for category (ii); and 7 years for category (ii)
3.	**Environment Trainer (staff)**	(i) B.E/B.Tech in Engineering with Post Graduation/Diploma in Environment from a recognized institution/body **or** (ii) B.Sc with M.Sc in Environment Science from recognised institution/body.	3 years for both categories
4.	**Environment Trainer (worker)**	(i) B.E/B.Tech in Engineering with Post Graduation/Diploma in Environment from a recognized institution/body **or** (ii) B.Sc with M.Sc in Environment Science from recognised institution/body.	1 years for both categories
5.	**SHE Auditor**	(i) Degree in Engineering with one-year regular diploma course in Industrial safety from recognised institution/body **or** (ii) Diploma in Engineering with one year regular diploma course in Industrial safety from recognised institution/body **or** (iii) B.Sc with one year regular diploma course in Industrial	5 years in auditing as lead auditor

		Safety from recognised institution/body In addition, Lead Auditor certificate course in ISO 45001 is essential	
6.	**Environment Auditor**	(i) B.E/B.Tech in Engineering with Post Graduation/Diploma in Environment from a recognized institution/body **or** (ii) B.Sc with M.Sc in Environment Science from recognised institution/body. In addition, Lead Auditor certificate course in ISO 14001 is essential	3 years in auditing
7.	**Competent Person**	Qualification & experience as approved by Chief Inspector of Factories	

Appendix – VIII

Maximum Permissible Age of Construction Plant and Machinery

S. No	Construction Plant & Machinery	Maximum permissible age
1.	Mobile Crawler Crane	15 years
2.	Mobile Truck/Tired Mounted Hydraulic Crane	10 years
3.	Mobile Elevated Working Platform	05 years
4.	Gantries	10 years
5.	Piling Rig	5 years
6.	Launching Girder	10 years subject to certification from Structural Engineer
7.	All other plant and machinery like Transit mixture, Trailers, Dumpers, Boom Placer Excavators, Pressure vessel including Air Compressors, Diesel Generator Sets, and locomotive etc.	10 years

Appendix – IX

Minimum Lighting Requirements

S. No.	Facility or Function	Luminance – Ix (lm/ft^2)
1.	Administrative areas (offices, drafting and meeting rooms, etc.)	540 (50)
2.	**Construction areas** - general indoor - general outdoor - tunnel and general underground work areas (minimum 110 lux required at tunnel and shaft heading during drilling, mucking and scaling)	 55 (5) 33 (3) 55 (5)
3.	**Access ways** - exit ways, walkways, ladders, stairs	 110 (10)
4.	**Maintenance / Operating areas / shops** - vehicle maintenance shop - carpentry shop - outdoors field maintenance area - refueling area, outdoors - shops, fine details work - shops, medium detail work - welding shop	 325 (30) 110 (10) 55 (5) 55 (5) 540 (50) 325 (30) 325 (30)
5.	Mechanical/electrical equipment rooms	110 (10)
6.	Hoists, Elevators, freight and passenger	215 (20)
7.	**Warehouses and storage rooms/area** - indoor stockroom, active/bulk storage - indoor rack storage - outdoor storage	 110 (10) 270 (25) 33 (3)
8.	Health Centers and First aid stations and infirmaries	325 (30)
9.	Toilets, wash and dressing rooms	110 (10)
10.	Work areas – general (not listed above)	325 (30)
11.	Parking areas	33 (3)
12.	Visitor areas	215 (20)
13.	Laboratories	540 (50)

Appendix- X

Contents of Safety and Health Training Programme

1. Safety Management Principle
2. Project Safety Manual & Plan
3. Accident Prevention Technique
4. Risk Assessment / HIRA
5. Statutory Laws like BOCW & other construction related regulations
6. Safety Inspection/Audits
7. Labour Welfare measures
8. Accident Reporting, Investigation & Analysis
9. House Keeping and its role in safety
10. Environment Safety and Management
11. Plant & Machinery & Maintenance and its significance in Safety
12. Behaviour based Safety Management
13. Safety in Construction works
14. Safety during Piling works
15. Safety stipulation under Tunnelling Rules (BS 6164)
16. Safety during Excavation work
17. Safety during Confined Space Entry
18. Safety in Ladder use
19. Safety during Work at Height
20. Safety in Welding and Cutting operation
21. Safety of Lifting Tools and Tackles and Lifting operations
22. Crane Safety
23. Fire Safety at Construction Site
24. Safety in Cutting / grinding and finishing operations
25. Traffic Management / Safety in Transportation
26. Electrical Safety
27. Storage & Handling of Hazardous Materials
28. Safety during Material handling (Manual/Equipment)
29. Safety in Steel Erection
30. Safety during handling of Hand Tools & Power Tools
31. Safety during steel handling and Bar-bending
32. Safety in Masonry work
33. Safety in Form work/ Scaffolding
34. First aid & E.R.P
35. Personal Health & Hygiene Awareness Programmes

The above topics are not limited, and additional topics should also be included as and when required based on working conditions or as required by employer

Appendix – X (A)

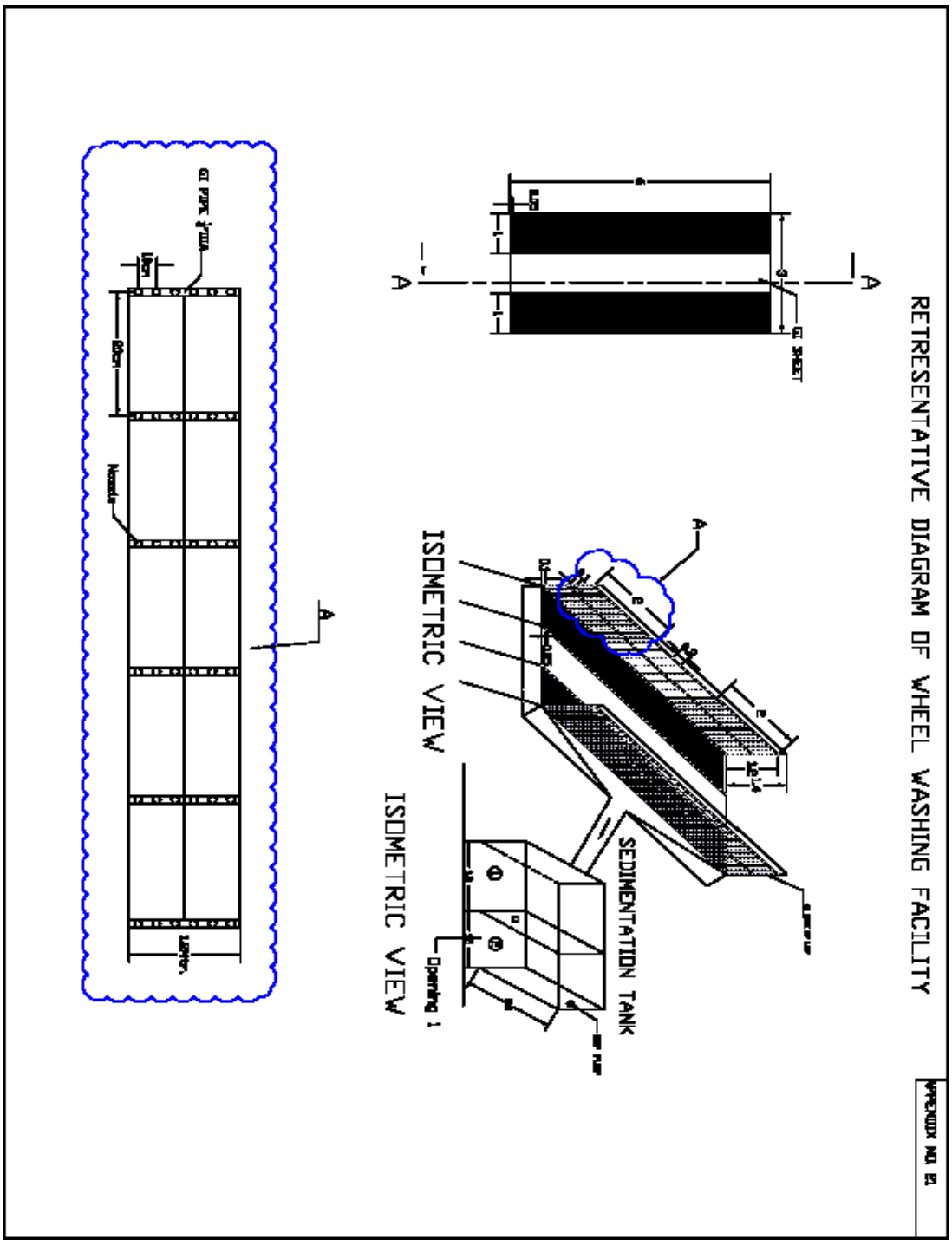
Contents of Environmental Training Programme

1. Environment Policy
2. Regulatory requirements
   a. Central
   b. State
   c. Judicial
   d. Environmental requirements of funding agency
3. Overview of Environmental issues at construction sites and funding agency's requirements.
4. Avoidance of nuisance
5. Environmental sanitation
6. Dust control measures
7. Overview of impact of construction on Climate change
8. Contractual requirements to reduce construction related impacts
9. Monitoring of environmental parameters and their significance
10. Waste Management
11. Occupational Noise and its mitigation
12. Health impacts of construction industry
13. Green Buildings
14. Resource minimization
15. ISO requirement (as applicable)

The above topics are not limited, and additional topics should also be included as and when required based on working conditions or as required by employer

Appendix – XI

Representative Diagram of Wheel Washing Facility



Appendix - XII

Waste Management Plan & Data Sheet

Waste Management Plan					
S. No.	**Waste Type**	**Unit**	**Estimated Quantity that is likely be generated during the currency of the contract**	**Proposed Storage facility details (Location and maximum quantity that will be stored at the facility)**	**Proposed disposal method**
1	Construction and Demolition Waste				
	a. Concrete waste	MT			
	b. Demolition Waste	MT			
	c. Bentonite/Polymer mixed soil	CUM			
	d. Good earth	CUM			
2	Hazardous Waste				
	a. Waste oil	Litres			
	b. Oil filters	Nos			
	c. Air filters,	Nos			
	d. Cartridges etc.	Nos			
	e. Other (if any)				
3	Recyclable waste				
	Paper, plastic, wood, bottles, rubber etc.	Kg			
4	Bio degradable Waste				
	Food waste, vegetable waste etc	Kg			
5	Metal Scrap	Ton			
6	E -Waste	Nos/Ton			
7	Miscellaneous (eg: wood waste, safety helmet, packing materials etc)				

Prepared by:	**Reviewed by:** **(Chief Environment Officer)**	**Approved by:** **(Project Manager)**

Appendix -XIII

(Size of Board 6' x 4', Back Ground Colour Yellow, Letters Black)

C&D Waste Display Board (as per C&D Waste Management Rules, 2016)

The Construction/Demolition site is authorised by..... Vide file no. ....; dated.....

Name and address with contact number of Contractor/Developer:

1) Address of the site
2) Area/Length
3) Date of initiation of the project(dd/mm/yy)
4) Scheduled completion date of the project (dd/mm/yy)
5) Date of completion/disposal/clearing of the site (dd/mm/yy)
6) Estimated waste (TPD)
7) Total estimated waste(MT) for the entire project
8) Nature of waste (concrete/iron/plastic/sand/soil) (TPD)

Material	Generated	Recycled	Reused	Disposed
Sand				
Concrete				

9) Identified waste disposal site
10) Mode of utilisation of waste (recycle/reuse/converting to construction material)
11) Mode of disposal
12) Mode of handling and transportation (manual/ mechanical/pneumatic)-(by road/rail)
13) Dust mitigation measures at the site(Water sprinkling/ curtain/ barriers etc)
14) Reason of delay in disposing waste(if any)
15) Accident reported (if any)

Name of agency Owner

Tel no.:

Appendix – XIV

Precautionary Measures for Pandemic/Epidemic disease outbreak

In Indian legislative i.e The Factory Act 1948, The Building & Other Construction Workers (Regulation of Employment and Condition of Service) Act 1996, some disease has been notified by Central/State authority in respective legislation which refers as Occupational disease occur during the course of employment. However, still new disease may also outbreak and become epidemic/pandemic in nature leading to major disastrous impact. Some of such disease like COVID-19 virus, Cholera, Ebola Virus, influenza, chikungunya, meningitis, yellow fever, plague etc. have already occurred. Hence, following key initiative shall be ensured by all contractors on 'Top Priority':

(i) Advisory release by Ministry of Health and Family Welfare or World Health Organisation or as directed by Employer shall be strictly ensured.
(ii) Ensuring good personal hygiene as well as surrounding housekeeping.
(iii) Routine medical checkup of all workmen and adopt measure to keep them medically fit.
(iv) Arrangement of hygienic/good shelter along with fulfilling daily essential needs including financial assistance, if necessitates.
(v) Restrict social gathering and working in staggered manner.
(vi) Ensure social/physical distancing to avoid contact with person to avoid spread of disease. etc.

The above list is not exhaustive, and detail precautionary measures as advised by Government as well as Employer based on disease outbreak shall be strictly implemented/adopted by all contractors irrespective of type of work.

1. The brief report of the measures taken shall be submitted to employer on daily basis. The compliance report on the advisory shall also be submitted to employer on weekly basis.
2. Contractor shall ensure all possible efforts to restrict the adverse effect of such type of disease and should adopt best initiative not even for worker but also for their families, if available.
3. Any violation of precautionary measure or delay in submission of records to employer will attract financial penalty which will not be less than Rs 25,000/- for each single violation.

Bid No. DM/EL/COR-OF/317:Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC"

S.No.	Description	Unit	Quantity	Rate (Excl GST)	Amount (Excl GST)
1A	Design, Supplying Installation, Testing and Commissioning of LED RGB/RGBWW/RGBNW/ RGBA/ RGBW (as per site requirement) Linear Profile / Wall Washer/ Projector light/ Spot Light luminaire for Facade lighting with aluminium extruded/ Die Cast housing with **driver (the Cost of the required driver(s) shall be included in this line item)** of following wattage as given below. The luminaire bracket (If required) shall be made of cold-rolled steel & shall be so designed that the luminaire can be tilted up to ±90°, having the rotation degrees scale shall be provided. The luminaire shall be **IP66** protection also having silicon gasket between optical cover & LED chamber to ensure proper IP66 protection. CRI>80, SDCM<5, THD<10%. as per IEC 61000-3-2, under voltage, over voltage protection, driver **inbuilt surge protection of 4KV and external surge protection (SPD) of 10 KV** common mode/differential mode, Driver Efficiency>85%, EMI/EMC as per CISPR-15(the parameter to be complied shall be as per the requirement and will be finalized during the design stage). There should be options of beam angles of 10/20/30/40/60(exact degree shall be finalized as per site requirement during design stage) asymmetric degree. Luminaire should have **efficacy of minimum 40 lm/W** for RGB/ RGBNW/ RGBWW/TNW and 65 lm/W for mono colour options. Luminaire shall be capable of producing **dynamic colour changing light for with 16 million colours by DMX/Ethernet based control**. The beam angle of the fitting shall be narrow, medium, wide or asymmetric as per the requirement. Luminaire shall be complete with replaceable driver and capable of operating at line voltage without any separate power supply from 100-270 V AC, 50 Hz with power factor > 0.9. Fixture shall be suitable to operate at an ambient temperature range of -10°C to +50°C and shall have impact resistance of IK 07. **Lifetime of complete luminaire (LED ,Driver , Electrical & control circuitry) shall be at least L70:50000 burning hours at 50°C**. Luminaire shall be conforming to BIS (IS 10322) with dully R Number marked and shall be complete with all necessary accessories required for proper working of fixture including connection/inter connection with weather proof ISI Marked copper conductor of minimum size 1.5sqmm connection cables and accessories , prewired Integral male/female water proof connectors of min **IP-67**. The successful bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79 report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer, Rohs Compliance, along with CE/ BIS certificate for following type of lights [**Application: For Piers/Columns, Steel Portal/ Longitudinal Louvers]** The contractor shall install the sample(s)/mock-up(s) and modification in the sample(s) if required, at site without any extra cost during the design stage for review and approval by Employer (NCRTC).				
1A (i)	**50Wattage** (Range of wattage 45W ≤Wattage ≤ 55, i.e. range equal and above 45W and equal & less than 55W) for Piers/Columns and Steel Portal	No.	787	45,644	3,59,21,828.00
1A (ii)	**40W RGB** (Range of wattage 35W ≤ Wattage ≤ 45, i.e. range equal and above 35W and equal & less than 45W) for Longitudinal Louvers	No.	620	44,644	2,76,79,280.00
1B	**Pixel dot LED light** : for longitudinal façade (In single and/or multiple screens: for example 4 screens with independent themes in 210 longitudinal facade of ring road side) **towards ring road side and Nizamuddin Railway station side** on the gap between the existing louvres (the gap is around 2 meter) or at any location at station, **create uniformity effect**. The contractor shall install the sample(s)/mock-up(s) and its modification if required without any extra cost at site during the design stage for review and approval by Employer (NCRTC). Dot pixel LED shall have meet following requirements as a minimum:- Design,Supply, Installation & commissioning of intelligent direct-view LED media façade complete with all luminaires, **mounting accessories/Supporting Structure** in the gap inter connection cables, connectors, power supplies/SMPS/ Drivers, software, and ancillary components required for operation of system. The luminaire shall consist of compact direct-view LED nodes arranged in maximum 50mm pitch (center-to-center) pixel spacing, utilizing high-efficiency low-power LEDs available in RGBW. Each node shall be housed in a fire retardant polycarbonate (PC) enclosure with anti-aging, UV-resistant optical covers. The fixture shall be suitable for track-mounted or surface-mounted installation, with a minimum protection rating of IP-66/IP-67 and IK-06. The luminaire shall provide a minimum output of 36 lumens per node for RGBW versions and upto 85 lumens per node for white versions, depending on optical configuration, with a rated life time of not less than 50,000 hours (L70 B50 at 35°C). The system shall support DMX 512 control with individual pixel control, smooth digital dimming, dynamic color-changing capabilities, and integration in to intelligent façade lighting systems. Pre-wired Male and female connectors (with IP-67 rating) shall be provided for through-wiring of power and data. The luminaire shall be suitable for operation in ambient temperatures ranging from -10°C to +55°C. The manufacturer shall provide complete technical documentation, photometric data, wiring diagrams, installation instructions, and compliance certificates, and the product shall be certified to CE/BIS requirements or equivalent international standards.	sqm	678	79,285	5,37,55,230.00
2	Design, Supply, Installation, Testing & Commissioning of an IP 65 Image projector CE certified. allowing images, pattern projections. The image projectors extraordinary quality of output should be controlled by the advanced DMX control system like DMX control suite etc which can control light distribution and visual appeal of light output with Adjustable beam angles of 15°,25°,30° the projection focus, should be adjusted by the control suite. The projector wattage should be 200W image projector with a lumen output of 12000lm at the CCT of 8000K with 16 bit dimming setup, with 4 stencils for image creation, control protocol of DMX 512 with a 3channel DMX configuration. Degree of ingress protection, shock rated protection shall be IP65 respectively. Housing: high quality aluminium alloy with matt black/ grey finish with a possibility of custom color finishes. Front Cover shall be air tempered flat glass, 4 mm thick optical lenses set: clear glass with an anti-reflection coating. Input voltage shall be 100-240 V / 50-60 Hz, Drive current 4A. M19 cable for power input ,3 pin male/female, and M16 cable for DMX input , 2 pin male/female. Operating temperature range of projector shall be -20°C to +50°C. The other parameters shall be provided in line to the specifications & installation, stencils for dynamic and static effects shall be provided as per site requirements & as per direction engineer-in charge complete in all respect. Also consider pole 7 or 9 mtr for mounting of **GOBO** as per site conditions.	No.	4	13,49,985	53,99,940.00
3	**Controller for Facade lighting of BOQ 1A & 1B** Design, Supplying Installation, Testing and Commissioning of DMX Controller for the system including address writer and programming the DMX controller with the suitable **designs/Themes as many as required by the Engineer-in-charge/Employer (NCRTC)** and all other accessories required for the running of the system. Output Protocol DMX512 with min 8x 2 universe should work in Stand Alone Mode and min 2 universe should work in live mode with laptop/ tablet/computer. It should be compatible for Programmability with PC, Mac, Tablet, Smartphone by using USB & Ethernet. DMX controller should have network controllability feature to control the scene remotely through LAN and triggered via UDP packets on port 4096 (512x 8) x 2. There should be provision for Memory micro SD card. Device should have Intuitive backlit keyboard with 10 presents and also have provision of keypad on device for changing scene manually from device. Device should be capable to work on Extended triggering possibilities (TCA) & also have Smart Upgrade Technology (SUT). It is an IP 20 unit and has an Operating Temperature of 0°C to 50°C. OS (Operating System) requirements for the controller is Mac OS X 10.8-10.12, Windows 7/8/10/11. Standards should be EC, EMC, ROHS. The controller should have a variety of features including 4096 x 2 DMX channels, clock/calendar, iPhone/iPad /Android remote control, Ethernet facilities, dry contact port triggering and multi-zone SD card memory. Network synchronization of one area across hundreds of universes with the possibility of 99 scenes across 5 areas with auto clock triggering for sunrise and sunset and as per the festivals for specific occasions. Device should be equipped with metal clamp to mount on wall/rack with data enablers and splitters as required. To be provided with IP 66 enclosure if installed in external environment.	Each	4	5,48,995	21,95,980.00
4	**Splitter**				
4.1	**Splitter** Design, Supplying Installation, Testing and Commissioning of DMX Splitter with Input Voltage range : 190-240V AC, Power Consumption 5W max. Housing is made of CRCA/ Aluminium with powder coated finish Mounting, 19 inch rack mountable, Operation Temperature - 10°C to +55°C, 8 Output with 3pin XLR terminal sockets, Ingress Protection Rating IP-67. This unit takes the DMX Signal from DMX Controller & split the signal into 8 separate output channels. The output terminals of Splitters are optically isolated from the input. Splitters should be capable to amplify the DMX signal & allowing the data link to be extended by max. 300 m (1044 ft.) using AWG 22 DMX cable or 150 m (500 ft.) using AWG 24 DMX cable or maximum 20-25 fixture per output channel. To be provided with IP-66 enclosure if installed in external environment etc., complete as required	Each	8	95,095	7,60,760.00
4.2	**Splitter** Supplying Installation, Testing and Commissioning of RDM-6 Wall Splitter, should be able to provide 6- output DMX/RDM splitter with DMX/RDM pass through supporting bi-directional communications for discovery, addressing and DMX control of Ethernet/DMX products. This unit takes the incoming DMX/RDM signal and splits the signal into six separate output channels allowing for expanding the number of devices controlled from 32 to 6x32. The output terminals are electronically isolated from the input & RDM-through port and share a common ground reference. All six output ports have an independent output driver to boost the DMX/RDM signal. Surface or DIN-rail mountable, Isolated DMX/RDM Input/Outputs, Automatic switching between DMX and RDM mode for auto-discovery, Environment-IP-66, Interior applications, Finish/Color-Polycarbonate, Certification: CE Certified. DMX Splitter/Booster etc. as required.	Each	8	95,095	7,60,760.00
5	**Signal Amplifier** Supplying Installation, Testing and Commissioning of Signal Amplifier to boost the Signal, IP 66/IP-67 rated module to enhance the depleting DMX Signals, should have IP 66 rates in-built connectors compatible with Luminaires. It should be offered with in-built electronic circuit for functioning. No external LED driver needed etc., complete as required.	Each	4	80,690	3,22,760.00
6	**DMX decoder** Supplying, installation, testing and commissioning of high quality DMX decoder, Power Input : DC 24V etc complete as required **(Required by Neo Flex or LED strip light LED so not required)**	Each	2	32,650	65,300.00
7	**Connector** Supplying and Fixing of IP67 "I" power prewired (1 m length wire) connectors having 3/4 pole cable connector, chuck type strain relief, Current rating 20A rms continuous, Easy and extremely precise locking system "Quick Lock" High impact materials - long-lasting and reliable etc complete as required	Each	50	5,775	2,88,750.00
8	**Connector** Supplying and Fixing of IP67 "I" DMX prewired (300mm length of wire) connectors having 3/5 pole cable connector, Male/Female connector with improved latch, cage type contacts, "solder stop" for easy soldering, and additional ground contact for best contact integrity between chassis and cable connector. More durable housing for maximum reliability, etc complete as required	Each	1,060	2,425	25,70,500.00
9	**Connector** Supplying and Fixing of 5 pin XLR Male/ Female prewired connectors having 5 pole cable connector, Male/Female connector with improved latch, cage type contacts, "solder stop" for easy soldering, and additional ground contact for best contact integrity between chassis and cable connector. More durable housing for maximum reliability etc as required	Each	50	14,470	7,23,500.00

10	**Processor** Supplying Installation Testing and Commissioning of push button type keypad with upto 10 buttons. Each button is programmable up to 16 scenarios. Also has got two dry-contact input to trigger any preset scene, etc as required	Each	2	4,23,350	8,46,700.00
11	Supply, laying, testing and commissioning of 22/24 AWG shielded twisted pair cable used for RS- 485 (9841) DMX network, data rate minimum 10mbps, conductor material copper or copper -clad, impedance 120 ohms, suitable -20 dig C to 55Deg C.	Meter	2,150	490	10,53,500.00
12	Supply & laying of wiring for the following **light point with 3 core x 2.5 sqmm**, 1100 Volt grade PVC insulated FR copper conductor flexible cable in raceway/Cable tray /heavy gauge GI conduit surface run with GI saddles, or concealed or in MS raceway including chases and complete with GI junction boxes, pull boxes, inspection boxes, bends & other accessories etc including insulated Protective Earth (PE) conductor and earthing excluding the cost of MCB as specified and as under: (Note: Existing cable tray may be used wherever available with due approval from Employer (NCRTC), if additional raceway or cable tray required in the route then the same shall be provided without any extra cost)				
12.1	One point controlled by 10A MCB.	No.	100	463	46,250.00
12.2	**Secondary or looping points wiring** as **specified 1A & 1B above** using 3 core x 2.5 sqmm insulated copper (P+N+PE) flexible cable in MS raceway, Cable tray or heavy gauge GI Conduit for lights on Platform outlets including providing terminal block, ceiling rose & other accessories etc as required Including the cost of switches, sockets & switch boxes) as per specifications and drawings as required. (Note: Existing cable tray may be used wherever available with due approval from Employer (NCRTC), if additional raceway or cable tray required in the route then the same shall be provided without any extra cost)	No.	1,185	350.50	4,15,342.50
13	**Distribution Board for Power Supply to Controller and Lighting work**	No.	4	92,575	3,70,300.00
	Incoming				
	1 Number 63 Amps/100 Amps (as per the load requirement) FP feeder each having one number 3 phase 415 Volts, 50 Hz, 10 KA front operated 63 Amps.FP MCB.				
	0-24 Hrs astronomical timer with suitable rating contactor for auto ON/Off Extn Lighting.				
	3 nos. 40A DP MCB ELCB/RCCB with Sensitivity of 30mA.				
	Outgoing				
	54 Nos.6A~20 A SP MCB spreaded in three rows (Bidder to check and mention as per their requirement)				
	Bus bars				
	1 set of 415 V 3 phase 4 wire, 50 HZ Colour coded copper bus bars.				
	Neutral Link				
	Suitable for all outgoings.				
	Earthing Terminals.				
	Earthing terminals suitable for all outgoing.				
14	Supply, laying, testing and commissioning of 1100 V grade, armoured, FRLS, XLPE, Aluminium (Al) Conductor cables on existing trays/ walls/ columns /indoor /trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of proper dressing of cables, markers providing identification tags, earthing of glands armouring etc. complete as per specifications, as required and as below. (Laying Cables from Main Distribution Panel (Power Source point provided by Employer placed at ASS: Auxiliary Substation at Concourse level) to Contractor supplied Light Distribution board. Termination at both end shall be done by Contractor with due permission of Employer or its representatives.				
14.1	4 core 25 sq mm Al Conductor	Meter	250	548	1,36,875.00
14.2	4 core 16 sq mm Al Conductor	Meter	250	473	1,18,250.00
15	Cable jointing and termination of cable as per item 14.1 - including cost of Supplying and fixing, Crimping lugs, double compression brass glands, insulation tape etc. complete as per specifications and as required. One number means termination of both side of cable				
15.1	4 core 25 sq mm Al Conductor	No	4	303	1,210.00
15.2	4 core 16 sq mm Al Conductor	No.	4	259	1,034.00
16	Supply and laying, Testing and commissioning of copper/GI Strips/wire for interconnecting the earthing stations, panels, DBs etc. of the following sizes in-built up trenches /surface/wall/ground complete with holes & fixing, jointing / terminating accessories as per specifications & drawing as required. (Quantity shall be paid as per the actual measurement as executed, however direct measurement shall not exceed the quantity indicated in drawing approved)				
16.1	50 mm x 6 mm GI strip	Meter	12	368	4,410.00
16.2	25 mm X 6 mm GI strip	Meter	499	173.50	86,576.50
17	SITC of GI strip of size 20x5 mm (Width xThickness), if required at site. (Note: Rates for mounting arrangement of GI/Aluminium Support Structure for LED Light/dot pixel as per the contractor's design shall be included in the above prices in item 1A & 1B and 2)	Meter	200	1,158	2,31,500.00
	Subtotal				**13,37,56,536.00**
	Cost for 1st years CAMC after 2-years DLP	Year	1	43,60,759.00	43,60,759.00
	Cost for 2nd years CAMC after 2-years DLP	Year	1	79,71,517.50	79,71,517.50
	Cost for 3rd years CAMC after 2-years DLP	Year	1	1,01,51,897.00	1,01,51,897.00
	Total for 3 years CAMC after 2-years DLP				**2,24,84,173.50**
	Total Including 3 Yearrs AMC				**15,62,40,709.50**

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
(A Joint Venture Govt. of India and participating State Govts.)
Gatishakti Bhawan, INA New Delhi – 110023

Addendum & Corrigendum No.-01 dated 13-08-2026

Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

S.No.	Bidding Document Part/Section/Clauses No.	Existing Document/Form/Clause/Subclause	Modified clause Document/Form/Clause/Subclause
		Items	**Name of Makes**
1.	**BOQ/Financial Bid**	BOQ/Financial Bid	BOQ/Financial Bid

Attachments

1. **BOQ/Financial Bid**

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
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Gatishakti Bhawan, INA New Delhi – 110023

Addendum & Corrigendum No.-05 dated 05-10-2026

Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad Meerut Namo Bharat Corridor of NCRTC.

S.No.	Bidding Document Part/Section/Clauses No.	Existing Document/Form/Clause/Subclause	Modified clause Document/Form/Clause/Subclause
1.	**Part-I, ITB**	–	ITB has been revised and the same is attached as ITB-R1
2.	**Part-I Section-3, EQC**	–	EQC has been revised and the same is attached as EQC-R1
3.	**Part-I Section-4, Bidding Forms**	–	Following have been revised/changed in the Bidding Form and the Bidding form is attached as **Annexure-1**. i) Guidance Note for submission of Bidding Forms has been attached along with Checklist of the Documents to be submitted. ii) Affidavit format has been revised and para 3 is inserted in regard to undertaking of labour code wages. iii) Form Fin-1,2 & 3 has been revised and combined as Fin-1. Fin-5 is deleted and Form Fin-4 is renamed as Fin-2. Format of Bid Security has been revised.

<table>
<tr><td>4.</td><td>Part-I Section-4, Bidding Forms</td><td>–</td><td>Exp-1 (R1) has been revised and the same is attached as EXP-1(R1)</td></tr>
<tr><td>5.</td><td>Part-I Section-4, Bidding Forms</td><td>–</td><td>“Checklist of the documents to be submitted” has been revised and the same is attached as Revision-1(R1)</td></tr>
<tr><td>6.</td><td>Part-II, Section 6B</td><td>–</td><td>Appendix-1 Added</td></tr>
<tr><td>7.</td><td>Part-II, Section 6B, Technical Specification, Annexure-2: List of Make, Vendor approval and selection procedure</td><td>In the event of contractor wanting to use alternate makes other than those stipulated, for anyreason, the contractor can send a proposal after ensuring that what he proposes at least meetsthe specifications both, the quality and safety standard of the stipulated makes and the financial benefit that will accrue to the employer. The alternate proposed product should be a proven one. He shall also stand full guarantee ……..decision will be final in the matter.

Annexure-2 (List of make) Serial number 20 shall be read as under: -

<table><tr><th>S.N.</th><th>Items</th><th>Name of Makes</th></tr><tr><td>20</td><td>LED Light Fitting</td><td>Philips (Signify), Bajaj, Surya, Wipro, Crompton</td></tr></table></td><td>In the event of contractor wanting to use alternate makes other than those stipulated, for anyreason, the contractor can send a proposal after ensuring that what he proposes at least meetsthe specifications both, the quality and safety standard of the stipulated makes except the item enlisted at s.no. 20 means this item shall be used only from enlisted makes. The alternate proposed product (except item at Serial no. 20) should be aproven one. He shall also stand full guarantee ……..decision will be final in the matter.

Annexure-2 (List of make) Serial number 20 shall be read as under: -

<table><tr><th>S.N.</th><th>Items</th><th>Name of Makes</th></tr><tr><td>20</td><td>LED Light Fitting (RGBW and dot Pixel Light)</td><td>Philips (Signify), Bajaj, Surya, Wipro, Crompton</td></tr></table></td></tr>
</table>

8.	**Part-II, Section 6B, Technical Specification, SECTION: E.05**	–	**1.3 Lighting Poles:** The minimum but not limited to the specification for Lighting pole is as under: A. The lighting poles shall be octagonal / round type poles as per IS 2713 (PART 2) –1980, hot dipgalvanized as per the design. The pole shall have a base plate, a large access panel, and necessary fixture mounting bracket at top and 2 nos. 1.5m length of 40mm diameter bent GI pipes for cable loop-in loop-out to be provided. The access panel shall provide easy access to a multi-way porcelain connector and fuse board, to be mounted inside the pole. The access shall be specially fabricated with adequate reinforcement and weather gasket toprevent ingress of moisture and vandal proofed. Poles shall have large diameter entries for incoming and outgoing cable and two earth studs. The pole fabrication shall conform to the drawings and where such drawing is not available, the contractor shall make drawing and haveit approved before fabrication. B. The octagonal / round poles shall be made from steel of minimum tensile strength 490 N/mm2. C. Foundation – adequate size M30 grade RCC foundation with 100mm raft including excavation is included in the rates of street light poles. Contractor shall submit design calculation in support of size of RCC foundation for external lighting poles duly certified by the Pole supplier. D. The pole shall be provided with a 20mm hole for wiring of street light pole and two nos. 20mm studs are to be welded for earthing. E. Suitable Electrical Insulation wrapping up to the height of 2.1 meter over the pole from the ground level shall be provided to avoid any electrocution of public.

9.	**Part-III, Section-9, Contract Forms**	–	Format of Performance Bank Guarantee has been revised and attached as **Annexure-2**.
10.	**Part-III, Section-8, Particular Conditions of Contact**	–	GCC clause 6 has been revised and the same is inserted in PCC (Part-B). Revised clause 6 is attached as **Annexure-3**.
11.	**Part-III, Section 8 Part-A, Appendix to Bid, Clause 4.2**	**10 % (Ten percent)** of the Accepted Contract Amount and in the same currency(ies) and its proportion as mentioned in the Accepted Contract Amount (the applicable percentage shall be as specified by the Employer following ITB 38 and ITB 39. The bank guarantee for performance security shall be valid for a period of 02 (two) months beyond the defect liability period.	10 % (Ten percent) of the Accepted Contract Amount and in the same currency(ies) and its proportion as mentioned in the AcceptedContract Amount (the applicable percentage shall be as specified by the Employer following ITB 38 and ITB 39.The bank guarantee for performance security shall be valid for a period of 02 (two) months beyond the defect liability period. **Further, the bank guarantee for performance security of CAMC work shall be valid for a period of 02 (two) months beyond the CAMC period.**
12.	**Part-III, Section 8, Part-B, PCC, clause 4.2.3**	Employer shall return the Performance Security on being satisfied with the claim of the Contractor that all the Works (including 2 year DLP and 3 years AMC) against the particular	**The validity of performance security shall initially be for 32 months from the date of issue of Letter of Acceptance. After successful completion of defect liability period, bidder shall have option to reduce the PBG amount up to the 10% of CAMC amount or submit the new PBG having amount of 10% of CAMC charges with the validity period of 3 years plus 2 months. The contractor shall maintain the said performance**

		schedule(s)/bill(s) for which Increased Performance Security was submitted have been completed in all respect.	**securities at its own expense and shall remain full force. No interest shall be payable by the NCRTC.** **The Employer shall return the Performance Security to the contractor within 21 days after the successful completion of Defect Liability Period and after issuance of Performance certificate.** **The Employer shall return new/reduced amount Performance Security of CAMC period to the contractor within 21 days after the successful completion of CAMC period and after issuance of Performance certificate.**
13.	**Part-III, Section 7, GCC, clause 6.2**	Full compliance of statutory requirements apart, the Contractor shall pay rates of wages and observe conditions of labour not less favourable than those established for the trade or the industry where the work is carried out. The Contractor shall make himself aware of all labour regulations and the same in the Contract Price.	Full compliance of statutory requirements apart, the Contractor shall pay rates of wages and observe conditions of labour not less favourable than those established for the trade or the industry where the work is carried out. The Contractor shall make himself aware of all labour regulations and the same in the Contract Price. **All the latest labour codes and Rules notified by "Government of India, Ministry of Labour and Employment" shall be applicable.**
14.	**Price Bid**	Price Bid	Price Bid-R1

Attachments:

1. **ITB-R1**
2. **EQC-R1**
3. **Annexure-1, 2, 3 & 4**
4. **Appendix-1**
5. **Reply of Prebid queries**
6. **Price Bid-R1**
7. **Form Exp-1(R1)**
8. **Checklist-(R1)**

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LTD.

Bid No.DM/EL/COR-OF/317: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC.

Price Bid/R1

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LTD
Gatishakti Bhawan
INA, New Delhi –110 023

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: GGM/E&M

Name of Work:Bid No.DM/EL/COR-OF/317: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

Contract No: .DM/EL/COR-OF/317

Name of the Bidder/ Bidding Firm / Company :						
BOQ1/R1 **(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)**						
Sl. No.	**Item Description**	**Amount (INR)**	**Excess(+)/ Less(-)/ At Par**	**Percentage Quoted by Bidder**	**TOTAL AMOUNT (INR)**	**TOTAL AMOUNT In Words**
1	2	3	4	5	6	7
4	**Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC.**	156240709.50			**0.00**	#VALUE!
Total in Figures					**0.00**	#VALUE!
Quoted Rate in Words		**#VALUE!**				

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: GGM/E&M

Name of Work : Bid No:-DM/EL/COR-OF/317: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

Contract No: .DM/EL/COR-OF/317

Name of the Bidder/ Bidding Firm / Company :							
BOQ2/R1 **(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)**							
Sl. No.	**Item Description**	**Discount Percentage(%)**	**Discount Amount (INR)**	**Total Amount of Schedules (INR)**	**Methodology of Discount (if any)**	**TOTAL AMOUNT AFTER DISCOUNT (INR)**	**TOTAL AMOUNT AFTER DISCOUNT In Words (INR)**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	**Total Amount of Schedule**		**0.00**	**0.00**		**0.00**	#VALUE!
Total in Figures						**0.00**	#VALUE!
Quoted Rate in Words		**#VALUE!**					

Letter of Price Bid/R1

Bid No.:	DM/EL/COR-OF/317

To
National Capital Region Transport Corportation Limited
GatiShakti Bhawan,INA, New Delhi- 110023

We, the undersigned, declare that:

(a)	We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.			
(b)	We offer to execute in conformity with the Bidding Documents and the Technical Bid submitted for the following Works: **Name of Work: Bid No. DM/EL/COR-OF/317: Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC.**			
(c)	The total price of our Bid, excluding any discounts offered in item (d) below is:			
	[amount in INR in figures]			**0.00**
			DISCOUNT (IN %age)	**Discount methodology**
(d)	**The discounts offered and the methodology for their application indicated in BoQ2 sheet are:-**		0.00%	0
	Discount Amount		**0.00**	
(e)	The total price of our Bid, including discounts offered in item (d) above is:			
	[Amount in INR in figures]	**0.00**	**[Amount in INR in words]**	**#VALUE!**
(f)				
(g)	If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents.			
(h)	We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.			
(i)	We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.			
	Name of the authorized representative of the bidder			
	Desiganation of the authorized representative			
	Name of the Bidder/ Bidding Firm / Company :			0
	Date: (DD/MM/YYYY)			

Bid No. DM/EL/COR-OF/317:Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC"

S.No.	Description	Unit	Quantity	Rate (Excl GST)	Amount (Excl GST)
1A	Design, Supplying Installation, Testing and Commissioning of LED RGB/RGBWW/RGBNW/ RGBA/ RGBW (as per site requirement) Linear Profile / Wall Washer/ Projector light/ Spot Light luminaire for Facade lighting with aluminium extruded/ Die Cast housing with **driver (the Cost of the required driver(s) shall be included in this line item)** of following wattage as given below. The luminaire bracket (If required) shall be made of cold-rolled steel & shall be so designed that the luminaire can be tilted up to ±90°, having the rotation degrees scale shall be provided. The luminaire shall be **IP66** protection also having silicon gasket between optical cover & LED chamber to ensure proper IP66 protection. CRI>80, SDCM<5, THD<10%. as per IEC 61000-3-2, under voltage, over voltage protection, driver **inbuilt surge protection of 4KV and external surge protection (SPD) of 10 KV** common mode/differential mode, Driver Efficiency>85%, EMI/EMC as per CISPR-15(the parameter to be complied shall be as per the requirement and will be finalized during the design stage). There should be options of beam angles of 10/20/30/40/60(exact degree shall be finalized as per site requirement during design stage) asymmetric degree. Luminaire should have **efficacy of minimum 40 lm/W** for RGB/ RGBNW/ RGBWW/TNW and 65 lm/W for mono colour options. Luminaire shall be capable of producing **dynamic colour changing light for with 16 million colours by DMX/Ethernet based control**. The beam angle of the fitting shall be narrow, medium, wide or asymmetric as per the requirement. Luminaire shall be complete with replaceable driver and capable of operating at line voltage without any separate power supply from 100-270 V AC, 50 Hz with power factor > 0.9. Fixture shall be suitable to operate at an ambient temperature range of -10°C to +50°C and shall have impact resistance of IK 07. **Lifetime of complete luminaire (LED ,Driver , Electrical & control circuitry) shall be at least L70:50000 burning hours at 50°C**. Luminaire shall be conforming to BIS (IS 10322) with dully R Number marked and shall be complete with all necessary accessories required for proper working of fixture including connection/inter connection with weather proof ISI Marked copper conductor of minimum size 1.5sqmm connection cables and accessories , prewired Integral male/female water proof connectors of min **IP-67**. The successful bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79 report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer, Rohs Compliance, along with CE/ BIS certificate for following type of lights **[Application: For Piers/Columns, Steel Portal/ Longitudinal Louvers]** The contractor shall install the sample(s)/mock-up(s) and modification in the sample(s) if required, at site without any extra cost during the design stage for review and approval by Employer (NCRTC).				
1A (i)	**50Wattage** (Range of wattage 45W ≤Wattage ≤ 55, i.e. range equal and above 45W and equal & less than 55W) for Piers/Columns and Steel Portal	No.	787	45,644	35,921,828.00
1A (ii)	**40W RGB** (Range of wattage 35W ≤ Wattage ≤ 45, i.e. range equal and above 35W and equal & less than 45W) for Longitudinal Louvers	No.	620	44,644	27,679,280.00
1B	**Pixel dot LED light** : for longitudinal façade (In single and/or multiple screens: for example 4 screens with independent themes in 210 longitudinal facade of ring road side) **towards ring road side and Nizamuddin Railway station side** on the gap between the existing louvres (the gap is around 2 meter) or at any location at station, **create uniformity effect**. The contractor shall install the sample(s)/mock-up(s) and its modification if required without any extra cost at site during the design stage for review and approval by Employer (NCRTC). Dot pixel LED shall have meet following requirements as a minimum:- Design,Supply, Installation & commissioning of intelligent direct-view LED media façade complete with all luminaires, **mounting accessories/Supporting Structure** in the gap inter connection cables, connectors, power supplies/SMPS/ Drivers, software, and ancillary components required for operation of system. The luminaire shall consist of compact direct-view LED nodes arranged in maximum 50mm pitch (center-to-center) pixel spacing, utilizing high-efficiency low-power LEDs available in RGBW. Each node shall be housed in a fire retardant polycarbonate (PC) enclosure with anti-aging, UV-resistant optical covers. The fixture shall be suitable for track-mounted or surface-mounted installation, with a minimum protection rating of IP-66/IP-67 and IK-06. The luminaire shall provide a minimum output of 36 lumens per node for RGBW versions and upto 85 lumens per node for white versions, depending on optical configuration, with a rated life time of not less than 50,000 hours (L70 B50 at 35°C). The system shall support DMX 512 control with individual pixel control, smooth digital dimming, dynamic color-changing capabilities, and integration in to intelligent façade lighting systems. Pre-wired Male and female connectors (with IP-67 rating) shall be provided for through-wiring of power and data. The luminaire shall be suitable for operation in ambient temperatures ranging from -10°C to +55°C. The manufacturer shall provide complete technical documentation, photometric data, wiring diagrams, installation instructions, and compliance certificates, and the product shall be certified to CE/BIS requirements or equivalent international standards.	sqm	678	79,285	53,755,230.00
2	Design, Supply, Installation, Testing & Commissioning of an IP 65 Image projector CE certified. allowing images, pattern projections. The image projectors extraordinary quality of output should be controlled by the advanced DMX control system like DMX control suite etc which can control light distribution and visual appeal of light output with Adjustable beam angles of 15°,25°,30° the projection focus, should be adjusted by the control suite. The projector wattage should be 200W image projector with a lumen output of 12000lm at the CCT of 8000K with 16 bit dimming setup, with 4 stencils for image creation, control protocol of DMX 512 with a 3channel DMX configuration. Degree of ingress protection, shock rated protection shall be IP65 respectively. Housing: high quality aluminium alloy with matt black/ grey finish with a possibility of custom color finishes. Front Cover shall be air tempered flat glass, 4 mm thick optical lenses set: clear glass with an anti-reflection coating. Input voltage shall be 100-240 V / 50-60 Hz, Drive current 4A. M19 cable for power input ,3 pin male/female, and M16 cable for DMX input , 2 pin male/female. Operating temperature range of projector shall be -20°C to +50°C. The other parameters shall be provided in line to the specifications & installation, stencils for dynamic and static effects shall be provided as per site requirements & as per direction engineer-in charge complete in all respect. Also consider pole 7 or 9 mtr for mounting of **GOBO** as per site conditions.	No.	4	1,349,985	5,399,940.00
3	**Controller for Facade lighting of BOQ 1A & 1B** Design, Supplying Installation, Testing and Commissioning of DMX Controller for the system including address writer and programming the DMX controller with the suitable **designs/Themes as many as required by the Engineer-in-charge/Employer (NCRTC)** and all other accessories required for the running of the system. Output Protocol DMX512 with min 8x 2 universe should work in Stand Alone Mode and min 2 universe should work in live mode with laptop/ tablet/computer. It should be compatible for Programmability with PC, Mac, Tablet, Smartphone by using USB & Ethernet. DMX controller should have network controllability feature to control the scene remotely through LAN and triggered via UDP packets on port 4096 (512x 8) x 2. There should be provision for Memory micro SD card. Device should have Intuitive backlit keyboard with 10 presents and also have provision of keypad on device for changing scene manually from device. Device should be capable to work on Extended triggering possibilities (TCA) & also have Smart Upgrade Technology (SUT). It is an IP 20 unit and has an Operating Temperature of 0°C to 50°C. OS (Operating System) requirements for the controller is Mac OS X 10.8-10.12, Windows 7/8/10/11. Standards should be EC, EMC, ROHS. The controller should have a variety of features including 4096 x 2 DMX channels, clock/calendar, iPhone/iPad /Android remote control, Ethernet facilities, dry contact port triggering and multi-zone SD card memory. Network synchronization of one area across hundreds of universes with the possibility of 99 scenes across 5 areas with auto clock triggering for sunrise and sunset and as per the festivals for specific occasions. Device should be equipped with metal clamp to mount on wall/rack with data enablers and splitters as required. To be provided with IP 66 enclosure if installed in external environment.	Each	4	548,995	2,195,980.00
4	**Splitter**				
4.1	**Splitter** Design, Supplying Installation, Testing and Commissioning of DMX Splitter with Input Voltage range : 190-240V AC, Power Consumption 5W max. Housing is made of CRCA/ Aluminium with powder coated finish Mounting, 19 inch rack mountable, Operation Temperature - 10°C to +55°C, 8 Output with 3pin XLR terminal sockets, Ingress Protection Rating IP-67. This unit takes the DMX Signal from DMX Controller & split the signal into 8 separate output channels. The output terminals of Splitters are optically isolated from the input. Splitters should be capable to amplify the DMX signal & allowing the data link to be extended by max. 300 m (1044 ft.) using AWG 22 DMX cable or 150 m (500 ft.) using AWG 24 DMX cable or maximum 20-25 fixture per output channel. To be provided with IP-66 enclosure if installed in external environment etc., complete as required	Each	8	95,095	760,760.00
4.2	**Splitter** Supplying Installation, Testing and Commissioning of RDM-6 Wall Splitter, should be able to provide 6- output DMX/RDM splitter with DMX/RDM pass through supporting bi-directional communications for discovery, addressing and DMX control of Ethernet/DMX products. This unit takes the incoming DMX/RDM signal and splits the signal into six separate output channels allowing for expanding the number of devices controlled from 32 to 6x32. The output terminals are electronically isolated from the input & RDM-through port and share a common ground reference. All six output ports have an independent output driver to boost the DMX/RDM signal. Surface or DIN-rail mountable, Isolated DMX/RDM Input/Outputs, Automatic switching between DMX and RDM mode for auto-discovery, Environment-IP-66, Interior applications, Finish/Color-Polycarbonate, Certification: CE Certified. DMX Splitter/Booster etc. as required.	Each	8	95,095	760,760.00
5	**Signal Amplifier** Supplying Installation, Testing and Commissioning of Signal Amplifier to boost the Signal, IP 66/IP-67 rated module to enhance the depleting DMX Signals, should have IP 66 rates in-built connectors compatible with Luminaires. It should be offered with in-built electronic circuit for functioning. No external LED driver needed etc., complete as required.	Each	4	80,690	322,760.00
6	**DMX decoder** Supplying, installation, testing and commissioning of high quality DMX decoder, Power Input : DC 24V etc complete as required **(Required by Neo Flex or LED strip light LED so not required)**	Each	2	32,650	65,300.00
7	**Connector** Supplying and Fixing of IP67 "I" power prewired (1 m length wire) connectors having 3/4 pole cable connector, chuck type strain relief, Current rating 20A rms continuous, Easy and extremely precise locking system "Quick Lock" High impact materials - long-lasting and reliable etc complete as required	Each	50	5,775	288,750.00
8	**Connector** Supplying and Fixing of IP67 "I" DMX prewired (300mm length of wire) connectors having 3/5 pole cable connector, Male/Female connector with improved latch, cage type contacts, "solder stop" for easy soldering, and additional ground contact for best contact integrity between chassis and cable connector. More durable housing for maximum reliability, etc complete as required	Each	1,060	2,425	2,570,500.00

9	**Connector** Supplying and Fixing of 5 pin XLR Male/ Female prewired connectors having 5 pole cable connector, Male/Female connector with improved latch, cage type contacts, "solder stop" for easy soldering, and additional ground contact for best contact integrity between chassis and cable connector. More durable housing for maximum reliability etc as required	Each	50	14,470	723,500.00
10	**Processor** Supplying Installation Testing and Commissioning of push button type keypad with upto 10 buttons. Each button is programmable up to 16 scenarios. Also has got two dry-contact input to trigger any preset scene, etc as required	Each	2	423,350	846,700.00
11	Supply, laying, testing and commissioning of 22/24 AWG shielded twisted pair cable used for RS- 485 (9841) DMX network, data rate minimum 10mbps, conductor material copper or copper -clad, impedance 120 ohms, suitable -20 dig C to 55Deg C.	Meter	2,150	490	1,053,500.00
12	Supply & laying of wiring for the following **light point with 3 core x 2.5 sqmm**, 1100 Volt grade PVC insulated FR copper conductor flexible cable in raceway/Cable tray /heavy gauge GI conduit surface run with GI saddles, or concealed or in MS raceway including chases and complete with GI junction boxes, pull boxes, inspection boxes, bends & other accessories etc including insulated Protective Earth (PE) conductor and earthing excluding the cost of MCB as specified and as under: (Note: Existing cable tray may be used wherever available with due approval from Employer (NCRTC), if additional raceway or cable tray required in the route then the same shall be provided without any extra cost)				
12.1	One point controlled by 10A MCB.	No.	100	463	46,250.00
12.2	**Secondary or looping points wiring** as **specified 1A & 1B above** using 3 core x 2.5 sqmm insulated copper (P+N+PE) flexible cable in MS raceway, Cable tray or heavy gauge GI Conduit for lights on Platform outlets including providing terminal block, ceiling rose & other accessories etc as required Including the cost of switches, sockets & switch boxes) as per specifications and drawings as required, (Note: Existing cable tray may be used wherever available with due approval from Employer (NCRTC), if additional raceway or cable tray required in the route then the same shall be provided without any extra cost)	No.	1,185	350.50	415,342.50
13	**Distribution Board for Power Supply to Controller and Lighting work**	No.	4	92,575	370,300.00
	Incoming				
	1 Number 63 Amps/100 Amps (as per the load requirement) FP feeder each having one number 3 phase 415 Volts, 50 Hz, 10 KA front operated 63 Amps.FP MCB.				
	0-24 Hrs astronomical timer with suitable rating contactor for auto ON/Off Extn Lighting.				
	3 nos. 40A DP MCB ELCB/RCCB with Sensitivity of 30mA.				
	Outgoing				
	54 Nos.6A~20 A SP MCB spreaded in three rows (Bidder to check and mention as per their requirement)				
	Bus bars				
	1 set of 415 V 3 phase 4 wire, 50 HZ Colour coded copper bus bars.				
	Neutral Link				
	Suitable for all outgoings.				
	Earthing Terminals.				
	Earthing terminals suitable for all outgoing.				
14	Supply, laying, testing and commissioning of 1100 V grade, armoured, FRLS, XLPE, Aluminium (Al) Conductor cables on existing trays/ walls/ columns /indoor /trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of proper dressing of cables, markers providing identification tags, earthing of glands armouring etc. complete as per specifications, as required and as below. (Laying Cables from Main Distribution Panel (Power Source point provided by Employer placed at ASS: Auxiliary Substation at Concourse level) to Contractor supplied Light Distribution board. Termination at both end shall be done by Contractor with due permission of Employer or its representatives.				
14.1	4 core 25 sq mm Al Conductor	Meter	250	548	136,875.00
14.2	4 core 16 sq mm Al Conductor	Meter	250	473	118,250.00
15	Cable jointing and termination of cable as per item 14.1 - including cost of Supplying and fixing, Crimping lugs, double compression brass glands, insulation tape etc. complete as per specifications and as required. One number means termination of both side of cable				
15.1	4 core 25 sq mm Al Conductor	No	4	303	1,210.00
15.2	4 core 16 sq mm Al Conductor	No.	4	259	1,034.00
16	Supply and laying, Testing and commissioning of copper/GI Strips/wire for interconnecting the earthing stations, panels, DBs etc. of the following sizes in-built up trenches /surface/wall/ground complete with holes & fixing, jointing / terminating accessories as per specifications & drawing as required. (Quantity shall be paid as per the actual measurement as executed, however direct measurement shall not exceed the quantity indicated in drawing approved)				
16.1	50 mm x 6 mm GI strip	Meter	12	368	4,410.00
16.2	25 mm X 6 mm GI strip	Meter	499	173.50	86,576.50
17	SITC of GI strip of size 20x5 mm (Width xThickness), if required at site. (Note: Rates for mounting arrangement of GI/Aluminium Support Structure for LED Light/dot pixel as per the contractor's design shall be included in the above prices in item 1A & 1B and 2)	Meter	200	1,158	231,500.00
	Subtotal				**133,756,536.00**
	Cost for 1st years CAMC after 2-years DLP	Year	1	4,360,759.00	4,360,759.00
	Cost for 2nd years CAMC after 2-years DLP	Year	1	7,971,517.50	7,971,517.50
	Cost for 3rd years CAMC after 2-years DLP	Year	1	10,151,897.00	10,151,897.00
	Total for 3 years CAMC after 2-years DLP				**22,484,173.50**
	Total Including 3 Yearrs AMC				**156,240,709.50**

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information

Government eProcurement System

Government eProcurement System

Published Corrigendum Details

Date : 06-Oct-2026 10:21 AM

Print

Organisation Chain :	National Capital Region Transport Corporation||GGM-Strategic Planning - NCRTC
Tender ID :	2026_NCRTC_285220_1
Tender Ref No :	DM/EL/COR-OF/317
Tender Title :	Design, Supply, Installation, Testing, Commissioning and Integrated test of Facade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor
Corrigendum Type :	Date

Corrigendum:3

Corrigendum Title	Corrigendum Description	Published Date	Document Name	Doc Size(in KB)
Addendum and Corrigendum-04	Extension of Date	01-Oct-2026 02:23 PM	Addendum_Corrigendum_4.pdf	254.33

Critical Dates

Publish Date	12-Aug-2026 03:00 PM	**Bid Opening Date**	14-Oct-2026 03:00 PM
Document Download/Sale Start Date	12-Aug-2026 03:00 PM	**Document Download/Sale End Date**	13-Oct-2026 03:00 PM
Clarification Start Date	12-Aug-2026 03:00 PM	**Clarification End Date**	21-Aug-2026 05:00 PM
Bid Submission Start Date	06-Oct-2026 03:00 PM	**Bid Submission End Date**	13-Oct-2026 03:00 PM
Pre Bid Meeting Date	20-Aug-2026 03:00 PM		

Corrigendum:2

Corrigendum Title	Corrigendum Description	Published Date	Document Name	Doc Size(in KB)
Addendum and Corrigendum-03	Extension of Dates	25-Sep-2026 02:49 PM	Addendum_Corrigendum_3.pdf	254.38

Critical Dates

Publish Date	12-Aug-2026 03:00 PM	**Bid Opening Date**	09-Oct-2026 03:00 PM
Document Download/Sale Start Date	12-Aug-2026 03:00 PM	**Document Download/Sale End Date**	08-Oct-2026 03:00 PM
Clarification Start Date	12-Aug-2026 03:00 PM	**Clarification End Date**	21-Aug-2026 05:00 PM
Bid Submission Start Date	01-Oct-2026 03:00 PM	**Bid Submission End Date**	08-Oct-2026 03:00 PM
Pre Bid Meeting Date	20-Aug-2026 03:00 PM		

Corrigendum:1

Corrigendum Title	Corrigendum Description	Published Date	Document Name	Doc Size(in KB)
Addendum and Corrigendum-02	Extension of Dates	16-Sep-2026 04:12 PM	Addendum_and_Corrigendum_02.pdf	257.07

Critical Dates			
Publish Date	12-Aug-2026 03:00 PM	**Bid Opening Date**	01-Oct-2026 03:00 PM
Document Download/Sale Start Date	12-Aug-2026 03:00 PM	**Document Download/Sale End Date**	30-Sep-2026 03:00 PM
Clarification Start Date	12-Aug-2026 03:00 PM	**Clarification End Date**	21-Aug-2026 05:00 PM
Bid Submission Start Date	25-Sep-2026 03:00 PM	**Bid Submission End Date**	30-Sep-2026 03:00 PM
Pre Bid Meeting Date	20-Aug-2026 03:00 PM		

Details Before Corrigendum

Critical Dates			
Publish Date	12-Aug-2026 03:00 PM	**Bid Opening Date**	24-Sep-2026 03:00 PM
Document Download/Sale Start Date	12-Aug-2026 03:00 PM	**Document Download/Sale End Date**	23-Sep-2026 03:00 PM
Clarification Start Date	12-Aug-2026 03:00 PM	**Clarification End Date**	21-Aug-2026 05:00 PM
Bid Submission Start Date	18-Sep-2026 03:00 PM	**Bid Submission End Date**	23-Sep-2026 03:00 PM
Pre Bid Meeting Date	20-Aug-2026 03:00 PM		

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
(A Joint Venture Govt. of India and participating State Govts.)
Gatishakti Bhawan, INA New Delhi – 110023

Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
1	Part-I, Section-3:EQC	Bidder should propose the light fixtures of the OEM who should have its own NABL with accredited lab certificate.	We strongly discourage the inclusion of such a tender requirement mandating the OEM to have its own in-house NABL-accredited laboratory, as this condition does not provide any meaningful additional assurance to the end client, i.e., NCRTC. The presence of an in-house NABL-accredited laboratory with the OEM does not, by itself, establish or guarantee any product superiority, technical superiority, or quality superiority. Further, testing a manufacturer's own products in its own laboratory may create a potential conflict of interest and does not necessarily provide the level of impartiality and independence expected in quality verification. Therefore, we strongly recommend that this clause be reconsidered and suitably modified. As an alternative, it may be stipulated that all products proposed to be supplied to NCRTC shall be tested and certified by an independent, third-party NABL-accredited laboratory. Such independent testing would ensure unbiased verification of the product's performance and compliance with the specified technical requirements and would significantly reduce the possibility of any compromise or manipulation in the testing process. Accordingly, we request NCRTC to remove the requirement for an OEM's own in-house NABL-accredited laboratory and instead accept valid test reports issued by independent third-party NABL-accredited laboratories.	Refer Appendix -1 of A&C-5
2	Part-I, Section-3:EQC	Bidder should submit the ISO: 9001:2015, ISO:14001:2015, ISO 45001:2018, ISO: 50001 certificates of proposed OEM of Light Fixtures.	ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 is understood as are for management system certifications, relating respectively to Quality Management, Environmental Management and Occupational Health & Safety Management. However, ISO 50001 relates to the internal energy management system of an organization. It does not certify the product quality, pole strength, coating thickness, wind-load suitability, luminaire performance, driver quality, or service life of decorative poles and luminaires. For this project, relevant quality parameters should be BIS, LM79, LM80, type test reports, routine test reports, IP / IK ratings wherever applicable, structural design approval, warranty, and independent testing. Accordingly, ISO 50001 may kindly be deleted from the mandatory requirements, as it does not have a direct nexus with the quality of decorative streetlight poles and luminaires.	Refer Appendix -1 of A&C-5
3	Part-I, IFB	Due Date of Tender: 23-Sep-2026 at 03:00 PM	In view of the above, we kindly request you to provide the necessary clarification on the queries raised and suitably extend the bid submission deadline by at least 10 days from the date of issuance of the clarification. This additional time will enable the bidders to adequately review the clarified requirements, finalize the technical proposal and submit a competitive and best-priced offer in accordance with the tender requirements. We therefore request your kind consideration and approval for the extension of the bid submission due date accordingly.	Refer A&C-4
4	Part-I, Section-3:EQC	Similar Nature Work shall mean: "Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light of Government Building, Commercial building, Railway stations/Metros/RRTS, Airports, Sports stadium, Heritage Building /Ancient monument, Any other similar Façade lighting work of public use project"	We respectfully submit that the Similar Work definition prescribed in the tender appears to be excessively narrow and restrictive, particularly considering the high-value nature of the subject work. Such a narrowly defined scope may substantially restrict wider participation and competition. The proposed façade lighting work is essentially an illumination/lighting work forming part of general electrical works and does not, by itself, require any specialized façade-specific technical expertise from the electrical contractor. Typically, the lighting design, technical specifications, product selection and supply of façade LED lighting systems are undertaken by the respective OEM/specialized LED lighting manufacturer, while installation and associated electrical. Further, we would like to bring to your kind notice that similar façade/illumination works are generally covered under General Electrical Works in various tenders of the Ministry of Railways, and we have several such references wherein façade lighting works have been executed under the broader General Electrical Works category. Considering that NCRTC is also similar to Indian Railways, we request NCRTC to kindly consider the prevailing practice followed in Indian Railway tenders & other government departments & PSU's and suitably broaden the Similar Work definition to include General Electrical Works / Illumination Works / Lighting Works, rather than restricting participation only to contractors having narrowly defined façade-specific experience. We strongly believe that such a revision will improve competition, encourage wider participation of technically competent electrical contractors, and ensure better price discovery, without compromising the technical requirements or quality of execution. We therefore request NCRTC to kindly review and suitably amend the Similar Work definition to facilitate wider and healthy participation in the tender.	Refer EQC-R1 of A&C-5

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
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Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
5	Part-I, IFB	Due date of tender: 23-Sep-2026 03:00 PM	Accordingly, you are requested to kindly confirm/clarify above queries and extend the due date of the bid submission by at least 10 days from your clarification date, so that we can quote our best prices in line to your requirement.	Refer A&C-4
6	Part-I, Section-3:EQC	Similar Nature of Work – Mono Façade OR RGB Dynamic Façade	The tender requires experience in similar nature of work as "Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light of Government Building, Commercial building, Railway stations /Metros/RRTS, Airports, Sports stadium, Heritage Building/Ancient monument, Any other similar Façade lighting work of public use project" however it is not clear that the façade lighting work shall be mono façade OR RGB Dynamic Façade work. We request you to clarify whether experience in static/mono-colour façade lighting OR RGB/RGBW dynamic façade lighting shall be considered.	Refer EQC-R1 of A&C-5
7	Part-I, Section-3:EQC	Turnover Criteria – Disproportionately High Requirement	The estimated cost of the tendered work is approximately ₹15.62 Crores, whereas the turnover requirement is Minimum Average Annual Construction Turnover of INR 26.75 Crore within the last 05 (five) years. We request you to kindly review the turnover requirement and consider reducing it to a reasonable and proportionate level commensurate with the estimated project value. It is to be noted that as per CPWD/CVC guidelines average annual financial turnover of a bidder during the last three consecutive financial years must be at least 30% of the estimated cost. Also kindly clarify that the turnover requirement is Annual Construction turnover OR total annual turnover since the nature of work is Electrical and not construction. A more proportionate turnover criterion will encourage participation from competent specialist façade lighting contractors while still ensuring adequate financial capacity for successful execution of the project.	Refer EQC-R1 of A&C-5
8	Price Bid BOQ Sl.No. 1A(i) & 1A(ii)	Change in Wattage of Lighting Fixtures as per BOQ	As per discussion in pre bid meeting, the scope of work also includes design in addition to SITC of façade lighting work however the wattage of the Light fixtures as per Item 1A(i) and 1A(ii) has been fixed as 45-50W and 36-45W RGB respectively. Kindly clarify if the change in wattage of fixtures will be permitted in order to achieve the design intent or we have to design considering the same range of wattage of lights only. In case the range of wattage of the light fixture shall remain fixed, it might not be possible to achieve the design conceived by the department since the legitimacy of the design concept is not ascertained with the specific wattages.	Refer Price Bid-R1 of A&C-5
9	Part-I, Section-3:EQC	Requirement of In-House NABL Accredited Laboratory for Lighting Manufacturer	The tender specifies a requirement for the lighting manufacturer/OEM to have its own in-house NABL-accredited laboratory. We request you to kindly reconsider this condition, as requiring an OEM to necessarily own an in-house NABL-accredited laboratory may restrict participation to a limited number of manufacturers, despite other manufacturers having their products duly tested and certified through NABL-accredited independent laboratories. We therefore request that the condition may be amended to permit manufacturers whose products are tested through NABL-accredited laboratories, whether the laboratory is owned by the manufacturer or is an independent accredited testing laboratory. Such an amendment would maintain the required quality and testing standards while ensuring wider participation and healthy competition.	Refer Appendix -1 of A&C-5
10	Part-I, Section-3:EQC	Requirement of ISO 50001 Certification for Lighting Manufacturer	The tender requires the lighting manufacturer/OEM to possess ISO 50001 certification. We request you to kindly review this requirement, as ISO 50001 relates primarily to an organisation's Energy Management System and may not necessarily be a direct indicator of the technical quality, reliability, photometric performance or suitability of a lighting product.	Refer Appendix -1 of A&C-5
11	Part-II, Section-6B:Technical Specification	Section E05, Annexure-2, List of Makes As per Sr. 20, only 5 brand of LED Light fitting are allowed i.e. Philips(Signify), Bajaj, Surya, Wipro, Crompton	Request inclusion of OSRAM/LEDVANCE make in the list of approved makes/manufacturers. As per the tender speci□ication, only five makes have presently been speci□ied. We request the authority to kindly consider OSRAM/LEDVANCE as an additional approved make, as OSRAM/LEDVANCE is a globally reputed manufacturer with established credentials and proven experience in providing quality lighting solutions. OSRAM/LEDVANCE products are widely used in infrastructure, commercial and public projects and can meet the required technical speci□ications, performance parameters, quality standards and warranty requirements specified in the tender. The inclusion of OSRAM/LEDVANCE will provide wider participation and healthy competition among technically quali□ied manufacturers, while ensuring that the required quality and performance standards are fully maintained. will provide wider participation and healthy competition among technically qualified manufacturers, while ensuring that the required quality and performance standards are fully maintained. will provide wider participation and healthy competition among technically qualified manufacturers, while ensuring that the required quality and performance standards are fully maintained. products are widely used in infrastructure, commercial and public projects and can meet the required technical specifications, performance parameters, quality	Follow Bid Conditions

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
(A Joint Venture Govt. of India and participating State Govts.)
Gatishakti Bhawan, INA New Delhi – 110023

Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
12	Part-I, Section-3:EQC	Section 3, SBD Evaluation and Qualification Criteria, Cl No 1.9 of Evaluation "Joint Venture Participation: Not Permitted"	Joint Venture/Consortium Participation: Permitted, subject to fulfilment of the prescribed technical, financial, statutory and experience requirements. The JV/Consortium members shall be jointly and severally responsible for satisfactory execution of the Contract." We request the Employer to kindly consider the above amendment in the interest of wider participation, competitive bidding and optimum value to the Employer.	Follow Bid Conditions
13	Part-I, Section-3:EQC	Section 3, SBD Evaluation and Qualification Criteria, Cl No 5 of 2.4.2 of Evaluation "Bidder should propose the light fixtures of the OEM who should have its own NABL with accredited lab certificate"	The above requirement stipulating that the OEM should have its own NABL-accredited laboratory may restrict participation to a limited number of OEMs, although the required product quality and performance can be adequately established through valid test reports issued by any competent NABL-accredited laboratory. The OEM shall submit valid and relevant test reports/certi□icates for the offered light fixtures issued by an NABL-accredited laboratory having the relevant scope of accreditation. The NABL-accredited laboratory need not necessarily be owned by the OEM."	Refer Appendix -1 of A&C-5
14	Part-I, Section-3:EQC	Section 3, SBD Evaluation andQualification Criteria, Cl No 7 of 2.4.2 of Evaluation"Bidder should submit the ISO: 9001:2015, ISO:14001:2015, ISO 45001:2018, ISO: 50001 certificates of proposed OEM of Light Fixtures."	ISO 50001 is an Energy Management System standard primarily intended for establishing, implementing and continually improving an organization's energy management system. The certification relates to the management of energy use and performance within an organization and is not a product-specific certification for LED light fixtures. Bidder shall submit valid ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 certificates of the proposed OEM of Light Fixtures. ISO 50001:2018 shall be optional/preferred and shall not be a mandatory eligibility criterion."	Refer Appendix -1 of A&C-5
15	Part-II, Section-6B:Technical Specification	Section E00, Electrical Work, Cl No 1.1 of Scope of Work "Bidder shall be a licensed Electrical Contractor possessing a valid Contractor's license of appropriate class in the state, employing supervisors and skilled workers having valid permits as per the regulations of Indian Electricity Rules and local Electrical Inspectors requirements"	Bidder shall be a licensed Electrical Contractor possessing a valid Contractor's License of appropriate class in the State and shall employ suitably qualified and competent supervisors and skilled workers as required for execution of the works in accordance with requirements of the Electrical Inspector/competent authority." We request the Employer to kindly consider the above amendment in the interest of wider participation and healthy competition.	Follow Bid condition
16	Part-I, Section-3:EQC	Form FIN 3A of Section-4 (Bidding Forms) "Evidence of Availability of Credit Line Financial Resources"	Kindly amend the clause to permit a Bank Solvency Certificate / Net Worth / acceptable banking reference as an alternative to mandatory OD/CC/fund-based credit facility.	Follow Bid Conditions
17	Part-II, Section-6B:Technical Specification	List of makes: LED Light fittings	We request you to Include Canara Brand under LED light fittings	Follow Bid Conditions
18	Part-I, Section-3:EQC	Joint Venture	We request you allow Joint Venture	Follow Bid Conditions
19	Part-I, Section-3:EQC	OEM who should have its own NABL with accredited lab certificate	Request tom relax the clause & accept 3rd Party NABL Certificates.	Refer Appendix -1 of A&C-5
20	Annexure-2 LIST OF MAKES S.N.20 LED Light fittings	Philips(Signify), Bajaj, Surya, Wipro, Crompton	We kindly request you to consider and include Leksa Lighting in Annexure-2 – List of Makes, S. No. 20: LED Light Fittings, as an approved make for the proposed works.	Follow Bid Conditions
21	Part-I, Section-3: EQC 2.4 Construction Experience 2.4.1 Contracts of Similar Size and Nature:	A. Participation as a contractor or JV partner in One Single Contract/ work, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 10.70 Crore in the similar nature work mentioned below. OR B. Participation as a contractor or JV partner in Two Single Contracts/ works, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 6.69 Crore in each Contract in the similar nature work mentioned below. OR C. Participation in Three Single Contracts/ works as a contractor or JV partner, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 5.35 Crore in each Contract in the similar nature work mentioned below. FOR STARTUP FIRMS: A. Participation as a contractor or JV partner in One Single Contract/work, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 8.03 Crore in the similar nature work mentioned below.	Request you to kindly clarify whether private works are considered under the similar work experience. Also, please clarify whether sub-let works are considered under the similar work experience	Follow Bid Conditions
22	Part-II, Section-6B:Technical Specification	Inclusion of Make "Instapower"	This is with reference to the pre-bid meeting wherein the NCRTC representative assured that our make "Instapower" would be considered. In this regard, we had already sent an email on 14th August 2026 to the email ID: ggm.enm.elev@ncrtc.in.	Follow Bid Conditions
23	Part-I, Section-3:EQC	Value enhancement	We further observe that a value-enhancement clause is not mentioned in the tender documents. We kindly request you to consider this point regarding value enhancement.	Follow Bid Conditions
24	Part-I, Section-3:EQC	Allow participation through Joint-Venture	In view of the above, we request you to please allow participation through Joint Venture for the said tender.	Follow Bid Conditions

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Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
25	Part-II, Section-6B:Technical Specification	Annexure-2 - LIST OF MAKES - 20 - LED Light fittings	Incorporate our Make "ORIENT ELECTRIC"	Follow Bid Conditions
26	Annexure 2 List of Makes Po	List of Approved Make	Jaquar fully satisfies the eligibility criteria prescribed for Original Equipment Manufacturers (OEMs) under the tender. However, despite meeting the stipulated qualification requirements, our brand has not been included in the list of approved/preferred makes. We have successfully completed and handed over the Janki Setu Media Façade Lighting Project, Rishikesh, executed for PWD Uttarakhand, wherein approximately 28,000 DOT Pixel luminaires were installed to transform a 346-meter suspension bridge into a dynamic media façade display.	Follow Bid Conditions
27	Part-I,IFB	Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC	We request you to please share the design as the TENDER DOCUMENTS only has the Elevation & Section Drawings in PDF	Follow Bid Conditions
28	Price Bid BOQ Sl.No. 1A	Design, Supplying Installation, Testing and Commissioning of LED RGB/RGBWW/RGBNW/ RGBA/ RGBW (as per site requirement) Linear Profile / Wall Washer/ Projector light/ Spot Light luminaire for Facade lighting with aluminium extruded/ Die Cast housing with driver (the Cost of the required driver(s) shall be included in this line item) of following wattage as given below. The luminaire bracket (If required) shall be made of cold-rolled steel & shall be so designed that the luminaire can be tilted up to ±90°, having the rotation degrees scale shall be provided. The luminaire shall be IP66 protection also having silicon gasket between optical cover & LED chamber to ensure proper IP66 protection. CRI>80, SDCM85%, EMI/EMC as per CISPR-15(the parameter to be complied shall be as per the requirement and will be finalized during the design stage). There should be options of beam angles of 10/20/30/40/60(exact degree shall be finalized as per site requirement during design stage) asymmetric degree. Luminaire should have efficacy of minimum 40 lm/W for RGB/ RGBNW/ RGBWW/TNW and 65 lm/W for mono colour options. Luminaire shall be capable of producing dynamic colour changing light for with 16 million colours by DMX/Ethernet based control. The beam angle of the fitting shall be narrow, medium, wide or asymmetric as per the requirement. Luminaire shall be complete with replaceable driver and capable of operating at line voltage without any separate power supply from 100-270 V AC, 50 Hz with power factor > 0.9. Fixture shall be suitable to operate at an ambient temperature range of -10°C to +50°C and shall have impact resistance of IK 07. Lifetime of complete luminaire (LED ,Driver , Electrical & control circuitry) shall be at least L70:50000 burning hours at 50°C. Luminaire shall be conforming to BIS (IS 10322) with dully R Number marked and shall be complete with all necessary accessories required for proper working of fixture including connection/inter connection with weather proof ISI Marked copper conductor of minimum size 1.5sqmm connection cables and accessories , prewired Integral male/female water proof connectors of min IP-67. The successful bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79 report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer, Rohs Compliance, along with CE/ BIS certificate for following type of lights [Application: For Piers/Columns, Steel Portal/ Longitudinal Louvers] The contractor shall install the sample/mock-up at site during the design stage for review and approval by Employer (NCRTC)	We request you to kindly accept IK06 Rating for Linear Profile/Wall Washer and as IK07 for Flood Washer/Spot Light shall be IK07	Follow Bid Conditions
29	Price Bid BOQ SL.No. 1B	Pixel dot LED light : for longitudinal façade towards ring road side and Nizamuddin Railway station side on the gap between the existing louvres (the gap is around 2 meter) or at any location at station, create uniformity effect. The contractor shall install the sample (mock-up) at site during the design stage for review and approval by Employer (NCRTC). Dot pixel LED shall have meet following requirements as a minimum:- Design,Supply, Installation & commissioning of intelligent direct-view LED media façade complete with all luminaires, mounting accessories/Supporting Structure in the gap inter connection cables, connectors, power supplies/SMPS/ Drivers, Control equipment, software, and ancillary components required for operation of system. The luminaire shall consist of compact direct-view LED nodes arranged in maximum 50mm pitch (center-to-center) pixel spacing, utilizing high-efficiency low-power LEDs available in RGBW. Each node shall be housed in a fire retardant polycarbonate (PC) enclosure with anti-aging, UV resistant optical covers. The fixture shall be suitable for track-mounted or surfacemounted installation, with a minimum protection rating of IP-66/IP-67 and IK-06. The luminaire shall provide a minimum output of 36 lumens per node for RGBW versions and upto 85 lumens per node for white versions, depending on optical configuration, with a rated life time of not less than 50,000 hours (L70 B50 at 35°C). The system shall support DMX 512 control with individual pixel control, smooth digital dimming, dynamic color changing capabilities, and integration in to intelligent façade lighting systems. Pre-wired Male and female connectors (with IP-67 rating) shall be provided for through-wiring of power and data. The luminaire shall be suitable for operation in ambient temperatures ranging from -10°C to +55°C. The manufacturer shall provide complete technical documentation, photometric data, wiring diagrams, installation instructions, and compliance certificates, and the product shall be certified to CE/BIS requirements or equivalent international standards	We request you to kindly specify the Wattage of DOT Pixel	Follow Bid Conditions
30	Price Bid	**Mock-up Approva**l The BOQ specifies that the contractor shall install a sample/mock-up at site during the design stage for approval by NCRTC.	Kindly clarify the mock-up approval methodology, acceptance criteria, and timeline for approval.	Refer Price Bid-R1 of A&C-5
31		**Dynamic Lighting Requirements** The BOQ specifies DMX/Ethernet-based control and dynamic colour-changing capability but does not define the scene requirements.	please confirm the number Of preset scenes required to be programmed and handed over under the project scope.	Follow Bid Conditions
32		**Stencil / GOBO projection Requiremen**t The BOQ specifies 200W image projectors with four stencils; however, projection content requirements have not been defined	Kindly confirm whether logo projection, station branding, NCRTC branding, event projection, or festival projection is envisaged	Follow Bid Conditions
33		**Pole Supply Scope** The BOQ mentions consideration Of poles up to 7 metres for GOBO projectors but does not provide detailed pole specifications.	please provide pole technical specifications, material, foundation requirement, Surface finish, and mounting arrangement.	Refer A&C-5
34		**Existing Cable Tray Availability** The BOQ allows usage of existing cable trays wherever available subject to NCRTC approval.	Kindly provide details and routing drawings of available cable trays intended for facade lighting installation. please confirm the extent Of additional cable trays, raceways, support structures, and mounting accessories required under the contractor's scope	Follow Bid Conditions

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Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
35		**Pixel Dot LED Technical Specifications** The BOQ specifies a maximum 50 mm pitch with DMX control, but some key technical parameters remain undefined	• Kindly confirm the wattage per pixel node. • BOQ specifies pixel dot lighting quantities in Square Meter (Sq.m.) basis, pixel-dot application areas along with intended visual outcome. • Kindly clarify whether the pixel-dot lighting system is intended to function as a Media Facade capable of displaying text, animations, logos, videos and event Content, or only dynamic decorative lighting effects	Follow Bid Conditions
36		Ambient Temperature of Controller	As the facade lighting controllers are proposed, kindly confirm acceptance of controller operating temperature range of OOC to +450C. Request NCRTC to confirm that this shall be acceptable.	Follow Bid Conditions
37	Part-I, IFB	Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light of Government Building, Commercial building, Railway stations/Metros/RRTS, Airports, Sports stadium, Heritage Building/Ancient monument, or any other similar public use project.	You are requested to kindly provide the approval of "Design, Supply, Installation, Testing & Commissioning and maintenance of **Façade/ Flood lighting** of Government Building, Commercial building, Railway stations/Metros/RRTS, Airports, Sports stadium, Heritage Building/Ancient monument, or any other similar public use project.	Refer EQC-R1 of A&C-5
38	Annexure 2: List of makes. Sr. no. 7	MCB Distribution Boards: &T Hager, MDS, Siemens, ABB, Havells, GE, Tricolite, Schneider, Neptune, Adlec,	MCB Distribution Boards: &T Hager, MDS, Siemens, ABB, Havells, GE, Tricolite, Schneider, Neptune, Adlec or any CPRI approved make manufacturer.	Follow Bid Conditions
39	Price Bid BOQ Sr. No. 1B & 3	Pixel dot LED light details & Controller	At 50 mm pitch, 678 sqm; appx. 271,200 pixel dots shall be required. Thus, appx. 2100 DMX universes shall be required to control individual pixel dot. However, only 4 nos. of controllers with 16 nos. of universes each, are mentioned in Sr. no. 3 which are insufficient to control individual pixel dots. Please clarify the control architecture expected, for pixel dots, 40W & 50 W RGBW luminiares (Sr. no.1).	Follow Bid Conditions
40	Price Bid BOQ Sr. No. 4.1 & 4.2	8 nos. each of splitters having 8 outgoings & 6 outgoings have been mentioned.	As mentioned in sr. no. 4.1 maximum 20-25 fixture per output channel have been considered. Thus, w.r.t luminaire quantities, the quantity of splitters is insufficient for given application to achecive desired lighting effects. Kindly confirm the distinct application & location of each.	Follow Bid Conditions
41	Price Bid BOQ Sr. No. 4.2	RDM-6 Wall Splitter has been mentioned.	However, luminaires mentioned are not RDM enabled. Please confirm the splitter shall be standard DMX spiltter as per splitter details mentioned sr. no. 4.1.	Follow Bid Conditions
42	Price Bid BOQ Sr. No. 13	Incomer rating of Lighting Distribution board mentioned is 63 Amps.	However, w.r.t. number of luminaires & their wattage mentioned in sr. no. 1A (i), 1A (ii) & 1B, the load is quite high. The incomer of 63Amps., of lighting distribution board mentioned, shall not be sufficient to cater given load. Please clarify.	Follow Bid Conditions
43	General points	–	1) Please share simulation & show themes of façade to be covered.	Follow Bid Conditions
44			2) Please share location & rating of power source that will be available.	Follow Bid Conditions
45			3) Please confirm, that drilling, cutting, welding, etc., as required during execution, will be permitted to bidder, in event of order.	Follow Bid Conditions
46	Price Bid	–	1.Please allow variation of wattages and beam angle to +1-20% for better design intent.	Follow Bid Conditions
47			2. Please allow similar nature of job as DMX Of Flood Lighting, DMX is also required for making different themes and synchronization of them.	Follow Bid Conditions

Digitally signed by KANCHAN SINGHA
Date: 2026.10.05 16:04:03 IST
Location: eProcurement System for Central PSUs

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
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Gatishakti Bhawan, INA New Delhi – 110023
Addendum & Corrigendum No.-04 dated 01-10-2026

Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC.

S No.	Bidding Document Part/Section/Clauses No.	Existing Document/Form/Clause/Subclause	Modified clause Document/Form/Clause/Subclause
1	Part I: Bidding Procedures Notice for Invitation of Bids (IFB), Para 1.2 (a) Bid Security	(i) Amount of Bid Security: INR 31.25 lakhs (ii) Validity of Bid Security in case of Bank Guarantee (BG)/ Date of Maturity in case of FDR: **06.04.2027** (180 days from last date of Submission). Bid Security (BG, Demand Draft, Banker's Cheque and FDR) in original as per clause 19 of BDS shall be accepted only up to 1500 hrs. on **08.10.2026 (One day prior to date of opening)** in the office of the Employer at the address mentioned hereinafter. The bidder must submit the bid security (original) in physical form and shall upload the scanned copies of bid security in their online bid.	(iii) Amount of Bid Security: INR 31.25 lakhs (iv) Validity of Bid Security in case of Bank Guarantee (BG)/ Date of Maturity in case of FDR: **11.04.2027** (180 days from last date of Submission). Bid Security (BG, Demand Draft, Banker's Cheque and FDR) in original as per clause 19 of BDS shall be accepted only up to 1500 hrs. on **13.10.2026 (One day prior to date of opening)** in the office of the Employer at the address mentioned hereinafter. The bidder must submit the bid security (original) in physical form and shall upload the scanned copies of bid security in their online bid.

2	Part I: Bidding Procedures Invitation of Bids (IFB), Para 1.2 (Bid Schedule/ Details) (c), (h) & (i)	**(c)) Availability of Bid Document** **From 12.08.2026 to 08.10.2026 (Up to 1500 Hrs.)** on e-procurement portal as mentioned in clause 1.2 (k) of IFB (Bid Schedule/Details). **(h) Date and time of submission of Online Bid** Bid submission start date: **01.10.2026 from 1500 Hrs**. Bid submission end date: **08.10.2026 up to 1500 Hrs.** **(i) Date & Time of opening of Bid (Technical Bid only)** **09.10.2026 at 1500 Hrs.**	**(c) Availability of Bid Document** **From 12.08.2026 to 13.10.2026 (Up to 1500 Hrs.)** on e-procurement portal as mentioned in clause 1.2 (k) of IFB (Bid Schedule/Details). **(h) Date and time of submission of Online Bid** Bid submission start date: **06.10.2026 from 1500 Hrs**. Bid submission end date: **13.10.2026 up to 1500 Hrs.** **(i) Date & Time of opening of Bid (Technical Bid only)** **14.10.2026 at 1500 Hrs.**

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
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Addendum & Corrigendum No.-06 dated 13-10-2026

Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC.

S No.	Bidding Document Part/Section/Clauses No.	Existing Document/Form/Clause/Subclause	Modified clause Document/Form/Clause/Subclause
1	Part I: Bidding Procedures Notice for Invitation of Bids (IFB), Para 1.2 (a) Bid Security	(i) Amount of Bid Security: INR 31.25 lakhs (ii) Validity of Bid Security in case of Bank Guarantee (BG)/ Date of Maturity in case of FDR: **11.04.2027** (180 days from last date of Submission). Bid Security (BG, Demand Draft, Banker's Cheque and FDR) in original as per clause 19 of BDS shall be accepted only up to 1500 hrs. on **13.10.2026 (One day prior to date of opening)** in the office of the Employer at the address mentioned hereinafter. The bidder must submit the bid security (original) in physical form and shall upload the scanned copies of bid security in their online bid.	(iii) Amount of Bid Security: INR 31.25 lakhs (iv) Validity of Bid Security in case of Bank Guarantee (BG)/ Date of Maturity in case of FDR: **24.04.2027** (180 days from last date of Submission). Bid Security (BG, Demand Draft, Banker's Cheque and FDR) in original as per clause 19 of BDS shall be accepted only up to **1500** hrs. on **26.10.2026 (One day prior to date of opening)** in the office of the Employer at the address mentioned hereinafter. The bidder must submit the bid security (original) in physical form and shall upload the scanned copies of bid security in their online bid.

2	Part I: Bidding Procedures Invitation of Bids (IFB), Para 1.2 (Bid Schedule/ Details) (c), (h) & (i)	**(c)) Availability of Bid Document** **From 12.08.2026 to 13.10.2026 (Up to 1500 Hrs.)** on e-procurement portal as mentioned in clause 1.2 (k) of IFB (Bid Schedule/Details). **(h) Date and time of submission of Online Bid** Bid submission start date: **06.10.2026 from 1500 Hrs**. Bid submission end date: **13.10.2026 up to 1500 Hrs.** **(i) Date & Time of opening of Bid (Technical Bid only)** **14.10.2026 at 1500 Hrs.**	**(c) Availability of Bid Document** **From 12.08.2026 to 26.10.2026 (Up to 1500 Hrs.)** on e-procurement portal as mentioned in clause 1.2 (k) of IFB (Bid Schedule/Details). **(h) Date and time of submission of Online Bid** Bid submission start date: **06.10.2026 from 1500 Hrs**. Bid submission end date: **26.10.2026 up to 1500 Hrs.** **(i) Date & Time of opening of Bid (Technical Bid only)** **27.10.2026 at 1500 Hrs.**
3.	Price Bid, Schedule-1B	Pixel dot LED light : for longitudinal .... approval by Employer (NCRTC). Dot pixel ... system. The luminaire shall consist of compact direct-view LED nodes arranged in maximum 50mm pitch (center-to-center) pixel spacing, ... or equivalent international standards.	Pixel dot LED light: for longitudinal .... approval by Employer (NCRTC). Dot pixel ... system. The luminaire shall consist of compact direct-view LED nodes arranged in maximum **75mm** pitch (center-to-center) pixel spacing, ... or equivalent international standards.

Section 3: Evaluation and Qualification Criteria

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with relevant ITB, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

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1. Evaluation

In addition to the criteria listed in relevant ITBs, the other relevant factors are as follows:

1.1 Undertaking for Conformity to Employer's Requirements

The bidder shall submit an undertaking as mentioned in Letter of Technical Bid confirming the deployment of Key Equipment and Personnel in accordance with the requirements as stipulated in Section 6 (Employer's Requirements).

Non-compliance with equipment and personnel requirements described in Section 6 (Employer's Requirements) shall not normally be a ground for bid rejection and such non-compliance will be subject to clarification/submission of undertaking for the deployment of equipment and personnel as per bid document requirement during bid evaluation.

1.2 Completion Time

Since alternative Completion Time, is not permitted under ITB 13.2, hence this clause is not applicable.

1.3 Technical Alternatives

Since Technical alternatives, is not permitted under ITB 13.4, hence this clause is not applicable.

1.4 Specialist Subcontractors: Not applicable.

1.5 Quantifiable Nonconformities and Omissions

Subject to ITB 14.2 and ITB 37.2, the evaluated cost of quantifiable non conformities including omissions, is determined as specified in ITB 31.3.

1.6 Domestic Preference

Domestic preference is applicable as per ITB 36.

1.7 Other Criteria

NIL

1.8 Contracts (Single Contract/Multiple Contracts): Single Contract

1.9 Joint Venture Participation: Not Permitted

2. Qualification

2.1 Eligibility

Criteria	Compliance Requirements	Documents
Requirement	**Single Entity**	**Submission Requirements**
2.1.1 Nationality		
Nationality in accordance with ITB 4.2.	Must meet requirement	Forms ELI-1, ELI- 2, UT– 2
2.1.2 Conflict of Interest		
No conflicts of interest in accordance with ITB 4.3.	Must meet requirement	Letter of Technical Bid
2.1.3 Blacklisting / Banning		
Not having been declared ineligible as described in ITB 4.4.	Must meet requirement	Letter of Technical Bid and Affidavit
2.1.4 Government-Owned Entity		
Bidder required to meet conditions of ITB 4.5.	Must meet requirement	Forms ELI - 1; ELI - 2 with attachments

2.2 Historical Contract Non-performance

2.2.1 History of Non-performing Contracts

Criteria	Compliance Requirements	Documents
Requirement	**Single Entity**	**Submission Requirements**
Non-performance of a contract[a] did not occur as a result of contractor default for last 5 calendar years from the last date of bid submission deadline.	Must meet requirement	Form CON-1

[a] Non-performance, as decided by the Employer, shall include all contracts where

i. non-performance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract; and

ii. contracts that were so challenged but fully settled against the contractor.

Non-performance shall not include contracts where the Employer's decision was overruled by the dispute resolution mechanism. Non-performance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

[b] This requirement also applies to contracts executed by the Bidder as JV member.

Note: In case of non-performance of a Contract, the Bid shall be treated as non-responsive.

2.2.2 Suspension Based on Execution of Bid-Securing Declaration:-

Criteria	Compliance Requirements	Documents
Requirement	**Single Entity**	**Submission Requirements**
Not under suspension from bidding by the Employer as the result of the execution of a Bid Securing Declaration.	Must meet requirement	Letter of Technical Bid

2.3 Financial Situation

2.3.1 Historical Financial Performance

Criteria	Compliance Requirements	Documents
Requirement	**Single Entity**	**Submission Requirements**
Submission of audited financial data for the last 03 financial years or from the date of incorporation, whichever is later, to demonstrate the current soundness of the Bidder's financial position. As a minimum, the Bidder's net worth for the last audited financial year calculated as the difference between total assets and total liabilities should be positive.	Must meet requirement	Form FIN – 1 (Audited annual financial statements are not required to be submitted)

2.3.2 Average Annual Construction Turnover

Criteria	Compliance Requirements	Documents
Requirement	**Single Entity**	**Submission Requirements**
Minimum **Average Annual Construction Turnover** of **INR 6.69 Crore** within the last **03 (three) Audited financial** years **<u>FOR STARTUPS</u>** Minimum Average Annual Construction Turnover of **INR 5.02 Crore** within the last **03 (three) Audited financial** years	Must meet requirement	Form FIN – 1

Note:

i. *In case date of incorporation is within the period of less than last 3 years, Average Annual Construction Turnover shall be calculated dividing the Available Construction Turnover by 3.*

ii. *Annual Construction turnover shall not include GST amount or any other taxes.*

2.3.3 Financial Resources

Criteria	Compliance Requirements	Documents
Requirement	**Single Entity**	**Submission Requirements**
The Bidder must demonstrate that its financial resources defined in FIN - 1, less its financial obligations for its current contract commitments defined in FIN - 2, meet or exceed the total requirement for the Subject Contract of **INR 4.46 Crores.**	Must meet requirement	Form FIN – 1 & FIN – 2

2.4 Construction Experience
2.4.1 Contracts of Similar Size and Nature:

Criteria	Compliance Requirements	Documents
Requirement	Single Entity	Submission Requirements
Construction Experience		
A. Participation as a contractor or JV partner in **One Single Contract/ work**, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 10.70 Crore** in the similar nature work mentioned below. OR B. Participation as a contractor or JV partner in **Two Single Contracts/ works**, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 6.69 Crore** in each Contract in the similar nature work mentioned below. OR C. Participation in **Three Single Contracts/ works** as a contractor or JV partner, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 5.35 Crore** in each Contract in the similar nature work mentioned below. **FOR STARTUP FIRMS:** A. Participation as a contractor or JV partner in **One Single Contract/ work**, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 8.03 Crore** in the similar nature work mentioned below. OR B. Participation as a contractor or JV partner in **Two Single Contracts/ works**, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 5.02 Crore** in each Contract in the similar nature work mentioned below. OR C. Participation in **Three Single Contracts/**	Must meet requirement	Form EXP – 1

works as a contractor or JV partner, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than **INR 4.01 Crore** in each Contract in the similar nature work mentioned below. **Similar Nature Work shall mean:** **"**Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light having RGBW and/or dot pixel light of Government Building/Commercial building/Railway stations/Metros/RRTS/ Airports/Sports stadium/Heritage Building/Ancient monument/Any other similar Façade lighting work of public use project**"**		
General Experience:		
(i) The Bidder shall possess a minimum of **two (2) years of maintenance experience** in the executed work of a similar nature, as defined under EQC Clause 2.4.1, in the last 7 years ending last day of the month previous to the month of the deadline for bid submission.	Must meet requirement	**Form Exp-1 and required certificate**
(ii) The Bidder shall submit the Authorization Letter from the OEM (Original Equipment Manufacturer means Manufacturer of Light Fixtures) of proposed makes, duly signed by an authorized representative of the OEM, confirming its commitment to provide lighting design/simulation services, supply of materials, fulfil warranty obligations, and extend necessary technical, commissioning, and maintenance support to the Bidder throughout the execution and warranty period of the contract.	Must meet requirement	**Authorization letter shall be submitted as per format attached as Annexure-4**.

2.4.2 Construction Experience in Key Activities: Deleted

Notes: -

1. The work is considered as substantially completed if 80% or more of the work is physically completed which is to be substantiated by a certificate as per Note of Form Exp-1.

   OR

   if **80%** of the awarded contract value or revised contract value whichever is lower has been certified for Payment. This is to be substantiated by a certificate as per Note of Form Exp-1. (Applicable to clause 2.4.1)

2. Only the value of the contract as executed by the bidder in his own name should be indicated and shall be considered. Where a work is undertaken by a group (Joint Venture), only that portion of the work which is undertaken by the concerned bidder shall be considered and the remaining done by the other partners of the group shall be excluded. This is to be substantiated with a specific certificate as per Note of Form Exp-1 / Form Exp-2. In case specific division of

works undertaken by the group partners is not stated in the submitted documents, then the percentage participation of the bidder in the group as stated in the submitted documents (JV/ agreement or Certificate) shall be considered as the value of the work done by the bidder/partner of JV. (Applicable to clause 2.4)

3. a) For Clause 2.3.1 Historical Financial Performance: In case the financial data is in a currency(ies) other than INR, the same shall be converted into equivalent INR by adopting Exchange rate between that currency and INR as on last day of the respective financial year.

   b) For Clause 2.3.2 Average Annual Construction Turnover, in case the figure is stated in currency other than INR, the same (currency of each financial year) shall be converted to INR by adopting the Exchange rate between that Currency and INR as on last day of the respective financial year.

   The Annual turnover in INR or converted into INR as above from the currency other than INR, shall be updated by 5% per annum compounded annually from the last day of the respective financial year up to the last day of the latest audited Financial year submitted by Bidder.

   c) For Clause 2.3.3, Financial Resources: In case the currency(ies) of current Contract commitments and Bank Certificate are in other than INR the same shall be converted into equivalent INR by adopting exchange rates between that Currency and INR as on 28 days prior to the deadline for bid submission.

   (Note: The Bidder may submit the overdraft / Fund based credit facilities (Bank certificate) for meeting the financial resources requirement. Any letter or document not complying with this requirement shall not be considered as supplementary financial resources.)

   Apart from this, any type of Solvency certificate submitted by Bidder shall not be considered as a credit line to meet the financial resources requirement and in such cases the financial resources requirement of the bidder shall be calculated by deducting the current contract commitments from the working capital).

   d) For Clause 2.4, such works with payment received in other than INR shall be converted in INR by adopting the Exchange rate between that Currency and INR as prevailing on the completion date mentioned in the completion certificate and if month of completion is mentioned in the Completion Certificate then the exchange rate of last working day of the Month shall be taken. The value of work in INR or converted into INR as above from the currency other than INR shall be updated by 5% per annum compounded annually up to the last day of the month previous to the month of deadline for bid submission.

   e) The source and modality of rates of exchange for (a), (b) and (c) above shall be as defined in ITB 15.4. Bidder should indicate the source used with documentary evidence for conversion and conversion rates used for converting foreign currency into INR.

4. If the submitted work(s) in support of clause 2.4.1 is a composite work/contract comprising of other works also, then **Client certificate submitted by the Bidder as per Note of Form Exp-1/ Exp-2 shall clearly indicate the quantum of similar nature of work/specific key activities executed by the Bidder for the value of work required in clause 2.4.1.**

Annexure-1

GUIDANCE NOTE FOR SUBMISSION OF BIDDING FORMS

Following shall be ensure by the bidder while submitting the bid:-

A. General Submission Requirements

i. Ensure each page of submitted documents/forms are legible, **signed & stamped by the Authorized Signatory**.
ii. Ensure witness signatures are provided wherever applicable.
iii. Submit all forms strictly in the prescribed format of the bidding document. Do not alter the language, numbering, clauses, or sequence of the forms, replace or delete paragraphs/clauses from standard formats.
iv. Ensure all mandatory fields/paras are filled and strike out all non-applicable options/clauses wherever required.
v. Consistency of Information
   - Ensure consistency of bidder name, bid number, dates, MSME status, and other details across all forms.
   - Ensure that the bid number mentioned in all forms are correct.

B. Format of Bank Guarantee- Checklist for Submission of Bid Security/Bank Guarantee (BG)

i. BG shall be submitted strictly in the format prescribed in the bidding document without any addition, deletion, modification, or omission of all clauses/words.
ii. Ensure correctness of IFB No., Name of Work, BG No., Bidder's Name and Address, and all other references as per the bidding document.
iii. BG amount, validity period, claim period, place of encashment, and beneficiary details shall be as specified in the bidding document.
iv. Names, designations, ID, signatures, seals, and witness details (where applicable) of authorized bank officials shall be clearly mentioned and consistent throughout the BG.
v. Final Submission Check Ensure that the scanned copy uploaded on the portal and the original BG submitted to the Employer are complete, legible, duly authenticated, and free from any discrepancies requiring amendment or clarification.

C. Letter of Technical Bid (LTB)

Before submission, ensure:
i. Ensure the LTB submitted on letter head of bidder
ii. All paragraphs/sub-paragraphs are properly filled i.e. para (b), (k) & (w).
iii. All pages are signed by Authorized Signatory.

D. Affidavit

i. Strike out non-applicable options properly i.e. sl. No-4 & also properly filled first para.
ii. Ensure affidavit is notarized/executed properly wherever required.

E. Incorporation / Legal Documents

Ensure to submit following legal documents based on constitution of bidder:
i. Certificate of Incorporation (for Private Limited firm)
ii. Partnership Deed (in case of partnership firm)
iii. Sole proprietorship affidavit (in case of sole proprietorship firm)
iv. Memorandum of Association (MOA) & Articles of Association (AOA)
v. PAN Card
vi. GST Registration Certificate
vii. Any merger/amalgamation approval documents, if applicable

F. Power of Attorney (POA)

i. Submit valid Power of Attorney as per bidding document Form ELI-4.
ii. Attach supporting documents such as Partnership Deed/Board Resolution/Affidavit, as applicable.
iii. Ensure to submit POA as per Form ELI-4. POA is properly signed and witnessed.

iv. Ensure name/designation of Authorized Signatory matches across all documents.

G. UT Forms

1. Form UT-2
   i. Strike out non-applicable options.
   ii. Ensure all fields are properly filled i.e. in para 1 and striked out (i) & (ii).
   iii. Ensure undertaking regarding Rule 144(xi) of GFR is submitted.

2. Form UT-4 (Local Content)
   i. Ensure CA/Cost Auditor/Statutory Auditor signature and seal are available.
   ii. Mention valid UDIN & UDIN details match with submitted figures.
   iii. Select applicable Class-I/Class-II category and also mention local content percentage.

H. ELI Forms

1. Form ELI-1
   i. Ensure bidder i.e. Single Entity name is correctly mentioned.

I. Experience & Qualification Documents (EXP Forms)

Form EXP-1
   i. Submit EXP-1 strictly in prescribed format.
   ii. Submit client completion certificates as per footnote sl. no. 2 of EXP-1.
   iii. Client certificates should clearly mention:
      a) Similar nature of work
      b) Completion date
      c) Contract value and completion cost of the work
      d) Percentage completion
      e) Scope of work executed

AFFIDAVIT

*(To be executed in presence of Public Notary on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper has to be in the name of the bidder)***

I_____***(Name and designation)*** appointed as the attorney/authorized signatory of the bidder (including its constituents), M/s._____(**hereinafter called the bidder**) for the purpose of the Bid for the work of _____ _____ as per the bid No._____ of NCRTC, do hereby solemnly affirm and state on behalf of the bidder including its constituents as under:

1. We understand that Employer requires that bidders, suppliers, and contractors must observe the highest standard of ethics during the procurement and execution of such contracts. We confirm and undertake that we including our constituents, any subcontractors or suppliers for any part of the Contract directly or otherwise have not been / shall not be engaged in corrupt, fraudulent, collusive, abusive, coercive, or obstructive practices or other integrity violations in competing for the Contract in accordance with ITB 3.

   We understand that the Employer has the right to reject our bid at any stage if it determines that we have directly or otherwise, engaged in corrupt, fraudulent, collusive, abusive, coercive, or obstructive practices or other integrity violations in competing for the Contract and will sanction a bidder or its successor, including declaring ineligible for a stated period of time, to participate in Employer's activities, if it at any time determines that the bidder has, directly or otherwise, engaged in corrupt, fraudulent, collusive, abusive, coercive, or obstructive practices or other integrity violations in competing for, or in executing a Contract of the Employer in accordance with ITB 3;

2. That the bidder or any of its constituents and/or sub-contractor /sub-consultant included in the bid have not been blacklisted/banned for business dealings with Ministry of Housing and Urban Affairs (MoHUA) along with any of its attached and subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance issuing banning of business applicable over all departments with the banning being valid as on the last date of submission of bids, except in cases where such blacklisting/banning has been withdrawn by Competent Authority or has ceased on the deadline for submission of the bids, for which satisfactory evidence is to be produce.

3. **The Bidder or any of its constituents and/or sub-contractor/sub-consultant included in the bid have not been debarred by MoHUA or by any of its attached or subordinate offices or by any metro rail organisations in India or by Department of Expenditure under Ministry of Finance with debarment being valid as on the last date of submission of bids, except in cases where such debarment has been withdrawn by Competent Authority or has ceased on the deadline for submission of the bids, for which satisfactory evidence is to be produce :**

   (a) For conviction under the offence of:

   The code on Wages, 2019 or the Code on Social Security, 2020 or the Industrial Relations Code, 2020 or the Occupational Safety, Health and Working Conditions Code, 2020; or

   (b) For More than one occasion in :

   (i) Failure to pay wages to employees engaged under the contracts; or

   (ii) Failure to remit statutory contributions towards social security, as required under applicable laws, in respect of such employees engaged under the contracts,

   and,

   any department mentioned at (3) above has been required to make payment of such wages or contributions due to default by the bidder.

4. That the Partner(s) of an existing JV who is not blacklisted/banned in its individual capacity by Ministry of Housing and Urban Affairs (MoHUA) along with any of its attached and subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance, shall be allowed to participate in the future Bids of the Employer.

5. **(i)** That no previous contract(s) of the bidder (or of any of its constituents, in case the bidder is a consortium) has been terminated for contractor's failure/default by: (a) MoHUA or any of its attached and/or subordinate offices; or (b) any metro rail organizations in India, in each case, any time prior to 2 (two) years before the deadline for submission of bids.

OR

(ii) That previous contract(s) of the bidder (or of any of its constituents, in case the bidder is a consortium) has been terminated for contractor's failure/default by: (a) MoHUA or any of its attached and/or subordinate offices; or (b) any metro rail organizations in India, in each case, any time prior to 2 (two) years before the deadline for submission of bids. However, such termination(s) has been: (a) stayed by a competent court of law / arbitral tribunal and such stay continues to be in effect as of the bid submission deadline; (b) declared to be unlawful or wrongful termination by a competent court of law / arbitral tribunal and such order continues to be in effect as of the bid submission deadline; or (c) revoked by the concerned counterparty.

(Strike out (i) or (ii) from above whichever is not applicable to the bidder)

6. That the Bidder or any of its constituents is neither Bankrupt/Insolvent nor is in the process of winding-up nor such a case is pending before any Court on the deadline of submission of the bid.

7. That the name of the Bidder or any of its constituents is not on the list of "Poor Performer" of MOHUA along with any of its attached and subordinate offices or of any metro rail organizations in India as on the deadline for submission of bid.

8. We declare and certify that we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.

9. We declare that the information and documents submitted along with the bid by us are correct and we are fully responsible for the correctness of the information and documents, submitted by us.

10. We understand that Bidders shall immediately inform the Employer, in case Bidder ceased to fulfill eligibility or Employer requests to provide evidence for their continued eligibility in terms of ITB 4. In case the bidder fails to inform the Employer or submits a false affidavit, the Employer has the right to reject the bid and Bidder shall also be liable for Banning of Business dealings by the Employer for a period of 02 (two) years.

11. We understand that in case it is found during the evaluation or at any time before signing of the Contract or after its execution and during the period of subsistence thereof, that we have made material misrepresentation or has given any materially incorrect or false information, then remedial actions shall be taken against us in accordance with ITB 3.1 (d).

(DEPONENT)
SEAL AND SIGNATURE OF THE BIDDER

Verification:

Verified on _____ day of _____ at _____ that the contents of the above-mentioned affidavit are true and correct and nothing material has been concealed there from.

(DEPONENT)
SEAL AND SIGNATURE OF THE BIDDER

*** The contents in Italics are only for guidance purpose and details as appropriate, are to be filled in suitably by Bidder.*

Attestation before Magistrate/Public Notary

Form FIN - 1: Historical Financial Performance

Each Bidder must fill out this form.

Name of the Bidder: _____

S.N	Description	Financial Data from Balance Sheet for Previous 3 Years (figure in INR)		
		Year 1*	**Year 2**	**Year 3**
1	**Total Assets (TA)**			
2	**Total Liabilities (TL)**			
3	**Net Worth = TA – TL**			
4	**Current Assets (CA)**			
5	**Current Liabilities (CL)**			
6	**Working Capital = CA – CL**			
7	Credit Line (must be substantiated by FIN - 1A) [a]			
8	Total Financial Resource (6+7)			
9	**Annual Construction Turnover (Excluding of GST)**			
10	**Average Annual Construction Turnover**			

*Year 1 shall be the latest audited financial year.....

[a] *To be considered, Credit Line must be substantiated by a letter from the bank issuing the line of credit, specific for the subject Package as prescribed in Form FIN-1A. Any letter or document not complying with this requirement shall not be considered as supplementary financial resources.*

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports.

_____

(Signature of CA/Auditor) & Seal

Name of CA/Auditor:_____

Registration No: _____

UDIN No._____

SEAL AND SIGNATURE OF THE BIDDER

Notes-

1. The contents of this Form should be certified by a Chartered Accountant/Auditor, in original, under his/her signature, stamp and membership number, failing which Employer has right to reject the Bid.
2. In case of Financial Statements are in currency(s) other than INR, in addition to above, Bidder shall also provide above information in separate sheet (**duly mentioning the figures in foreign currency, exchange rate and converted equivalent INR amount**) duly certified by Chartered Accountant/Auditor in INR equivalent by using methodology for adopting exchange rate as specified in Note 7 under clause 2.4 of EQC and ITB 15.4.
3. In case of package specific bank certificate (in Format Form FIN 1A) is submitted, then the same shall be considered to meet the requirement of financial resources, irrespective of Current Contract Commitments and negative working capital.
4. In case of bank certificate with sanctioned credit limits is submitted instead of package specific bank certificate, then in such cases bank certificate shall indicate the availability of overdraft/fund based credit limits as on 28 days prior to the bid submission end date. However, in such cases, current contract commitments and latest working capital shall also be considered.
5. In case date of incorporation is within the period of less than last 3/5 years, Average Annual Construction Turnover shall be calculated dividing the Available Construction Turnover by 3/5.

[In case of Single Entity]
(On Bank's Letter Head)

Form FIN – 1A: Evidence of Availability of Credit Line Financial Resources

Date : _____

[Each Bidder must fill out this form to demonstrate financial resources comprising credit line statements or overdraft facilities, as stated in form FIN-1.]

Project Name:

Bidding Package Name and Identification Number: ..... *(to be filled in as indicated in ITB 1.1) ...*

BANK CERTIFICATE

This is to certify that M/s ..... is a reputed company with a good financial standing.

If the contract for the work, namely..... is awarded to the above firm, we shall be able to provide overdraft / Fund based credit facilities to the extent of *Rs ..... to meet their working capital requirements for executing the above contract.

____Sd.____
Name of Bank: _____
Name of Bank Manager_____
ID of Bank Official :
Address of the Bank_____

* Value to be calculated as on 28 days prior to the Bid submission deadline.

Note: Solvency certificate issued by the bank will not be considered as overdraft/ fund based credit facility.

Form FIN- 2: Financial Requirements for Current Contract Commitments

Bidders should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Name of the Bidder: _____

Current Contract Commitments (figure in INR)							
No.	Name of Contract	Employer's **Contact (Address, Tel, Fax)**	**Contract Completion**		**Outstanding Contract Value (X)** [a]	**Remaining Contract Period in months (Y)** [b]	**Monthly Financial Resources Requirement (X / Y)**
			Original Date	**Revised Date (if any)**			
1							
2							
3							
4							
	Total Monthly Financial Requirement for Current Contract Commitments						. . . . .

[a] *Remaining outstanding contract values to be calculated as on 28 days prior to the bid submission deadline (In case the value of contract is in a currency other than Indian Rupees, the value of contract in foreign currency shall be converted into equivalent Indian Rupees with the exchange rates as specified in* Note 7 under clause 2.4 of EQC and *ITB 15.4.*

[b] *Remaining contract period to be calculated as on 28 days prior to bid submission deadline.*

Certified that current commitments on all the contracts that have been awarded or for which a letter of intent or acceptance has been received or for the works in progress or the works approaching completion, value of outstanding work has been indicated in the above table correctly. It is further certified that if later on the employer discovers that information provided in the table is incorrect then the employer may treat our bid invalid and it may be liable for rejection

SEAL AND SIGNATURE OF THE BIDDER

_____

(Signature of CA/Auditor) & Seal

Name of CA/Auditor:_____

Registration No: _____

_____

UDIN No._____

The above information shall also be certified by Chartered Accountant/Company Auditor, in original, under his/her signature, stamp and membership number**, failing which Employer has right to reject the Bid.**

Format for Bid Security
(Please refer relevant clause of ITB)

Bank Guarantee

(On non-judicial stamp paper of the appropriate value in accordance with Stamp Act. The stamp paper should be in the name of the Executing Bank).

To
National Capital Region Transport Corporation Ltd.,
GatiShakti Bhawan, INA, New Delhi-110023
Tele: +91-11-24666700,
Email: .....

Beneficiary: National Capital Region Transport Corporation Ltd. (hereinafter called "the Employer")

Bank Guarantee No.: ..... Date:.....

We have been informed that . . . . . *[***Insert *name of the Bidder*]*** ..... intends to submit to you its bid (hereinafter called "the Bid") for the execution of . . . . . [***name of work***]. . . . . under Invitation for Bids No. . . . . ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid security.

At the request of the Bidder, we **[*name of bank*]** hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of **[*amount in words*] [*amount in figures*]** upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions without your needing to prove or to show grounds for your demand or the sum specified therein.

The Bank undertakes to immediately pay on presentation of demand by the Employer any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Employer on the Bank shall be final, conclusive and binding, absolute and unequivocal on the Bank notwithstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Bidder or Bank.

The Bank shall pay the amount as demanded immediately on presentation of the demand by Employer without any reference to the Bidder and without the Employer being required to show grounds or give reasons for its demand of the amount so demanded.

The Bank Guarantee is unconditional and irrevocable.

The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Bidder.

That this Guarantee commences from the date hereof and shall remain in force till ..... **(Date to be filled as mentioned in clause 1.2 (a) of IFB (Bid Schedule))** and all the demands and claims by the Employer, under this Guarantee, may be made in writing until 28 (twenty-eight) days after the expiry of the Guarantee.

The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the Employer. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No.758, except that the supporting statement under Article 15 (a) is excluded.

Date .....
Place.....

Name, Designation & ID of Authorised Signatory(ies)
Bank Name and Address
Bank's Seal

Note:
All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.

Annexure-2

FORMAT FOR PERFORMANCE SECURITY

(Please refer relevant clause PCC/SCC)

Bank Guarantee

(On non-judicial stamp paper of the appropriate value in accordance with Stamp Act. The stamp paper should be in the name of the Executing Bank).

To
National Capital Region Transport Corporation Ltd.,
GatiShakti Bhawan, INA, New Delhi-110023
Tele: +91-11-24666700,
Email: .....

Beneficiary: National Capital Region Transport Corporation Ltd. (hereinafter called "the Employer")

Bank Guarantee No.: ..... Date:.....

We have been informed that **[*name of the contractor*]** (hereinafter called "the Contractor") in pursuance of Letter of Acceptance (LOA) No. .....Dated....., has been awarded the work for the execution of (***Bid No. and Name of Work)*** .....(hereinafter called "the Contract")

Furthermore, we understand that, according to the conditions of the Contract, a performance security is required.

At the request of the Contractor, we [*name of the bank*] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of [*name of the currency and amount in words*][1][*amount in figures*] such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

The Bank undertakes to immediately pay on presentation of demand by the Employer any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Employer on the Bank shall be final, conclusive and binding, absolute and unequivocal on the Bank notwithstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Contractor or Bank.

The Bank shall pay the amount as demanded immediately on presentation of the demand by Employer without any reference to the Contractor and without the Employer being required to show grounds or give reasons for its demand of the amount so demanded.

The Bank Guarantee is unconditional and irrevocable.

The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Contractor.

That this Guarantee commences from the date hereof and shall remain in force **till .....** [2] and all the demands and claims by the Employer, under this Guarantee, may be made in writing until 28 (twenty-eight) days after the expiry of the Guarantee.

---

1 The guarantor shall insert an amount representing the percentage of the contract price specified in the contract and denominated either in the currency(ies) of the contract or a freely convertible currency acceptable to the employer.

2 Insert the date 60 days after the completion date including Defect Liability period. The employer should note that in the event of an extension of the time for completion of the contract, the employer would need to request an extension of this guarantee from the Contractor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the Employer. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No.758, except that the supporting statement under Article 15 (a) is excluded.

The said Bank Guarantee shall be encashable/payable at [.....Insert Bank Branch Name located at Delhi/NCR].

Date .....
Place.....

Name, Designation & ID of Authorised Signatory(ies)
Bank Name and Address
Bank's Seal

Note:

All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.

Annexure-4

(On letter head of OEM (Original Equipment: LED light Fixture manufacturers)

AUTHORIZATION LETTER cum CERTIFICATE- FROM LED LIGHTING FIXTUREs OEM

Date: _____

To,
Group General Manager / E&M(Elevated)
National Capital Region Transport Corporation Ltd., GatiShakti Bhawan,
INA, New Delhi – 110023
Tel : +91-11- 24666700, Fax : +91-11- 24666723
Email : ggm.enm.elev@ncrtc.in

Subject: Authorization for Participation in Bid No DM/EL/COR-OF/317 for Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

We, M/s _____(**Name of OEM**), having our registered office at _____, are an established Manufacturer (OEM) of LED Façade Lighting Systems and hereby certify and undertake as under:

1. **Authorization of Bidder/ Tenderer**

   We hereby authorize M/s _____ (**Bidder Name and Address of Bidder**) to participate in the subject Bid and submit our products, technical proposals, photometric designs, and related documents as part of the bid.

   We further confirm that for this bid, the above said bidder is hereby authorized to offer and execute the project using only our make and brand of luminaires, drivers, control systems and associated accessories, and no alternate make shall be proposed.

2. **Past Experience and Joint Execution Certification**

   We hereby certify that

   i) M/s _____ (**Bidder Name & Address**) has successfully executed, using our products, similar nature of works as defined in the Tender Document (EQC 2.4.1), involving design, supply, installation, testing, commissioning and maintenance of façade lighting systems.
   ii) The Bidder possesses adequate experience in handling installation, testing and commissioning of façade lighting projects utilizing our luminaires and control systems.
   iii) We also undertake that the OEM technical experts and support resources shall be made available for the subject project to ensure quality in design, installation, testing, commissioning and maintenance support. OEM shall ensure that during installation and commissioning of façade lights, and that final acceptance shall be based on achieving the approved lighting simulation, lux levels, uniformity, colour consistency and visual appearance at site, not merely on supply of fixtures.

   We confirm that this authorization has been issued considering the Bidder's proven experience in execution of façade lighting projects using our products and systems.

   The Employer reserves the right to verify the authenticity of this certification and the claimed joint project experience directly from the OEM.
   Failure to submit such certification shall render the bid non-responsive.

   We hereby certify that the above information is true and correct and undertake to honor all commitments stated herein.

   Important Note: - ***Bidder shall submit the authorization letter from OEM whose is meeting the Construction and general experience defined in Clause 2.4.1 of EQC***

   For M/s _____ (OEM Name)
   Authorized Signatory
   Name: _____ Designation: _____
   Mobile: _____Email: _____
   Company Seal

Appendix-1: (Part of Part-II of the bid document)

(On letter head of OEM (Original Equipment: LED light Fixture manufacturers)

AUTHORIZATION LETTER cum CERTIFICATE- FROM LED LIGHTING OEM

Date: _____

To,
Group General Manager / E&M(Elevated)
National Capital Region Transport Corporation Ltd., GatiShakti Bhawan,
INA, New Delhi – 110023
Tel : +91-11- 24666700, Fax : +91-11- 24666723
Email : ggm.enm.elev@ncrtc.in

Subject: Authorization for Participation in Bid No DM/EL/COR-OF/317 for Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

We, M/s _____(**Name of OEM**), having our registered office at _____, are an established Manufacturer (OEM) of LED Façade Lighting Systems and hereby certify and undertake as under:

1. **Authorization of Bidder/ Tenderer**
   We hereby authorize M/s _____ (**Bidder Name and Address of Bidder**) to participate in the subject Bid and submit our products, technical proposals, photometric designs, and related documents as part of the bid.
   We further confirm that for this bid, the above bidder is authorized to offer and execute the project using only our make and brand of luminaires, drivers, control systems and associated accessories, and no alternate make shall be proposed

2. **OEM Responsibility for Design**
   We undertake full technical responsibility for the façade lighting design proposed under this bid, including but not limited to:
   a) Architectural lighting concept and illumination strategy.
   b) Lux level calculations and lighting simulations.
   c) 3D visualizations, renderings and night-view effects.
   d) Fixture selection, beam angle optimization and aiming details.
   e) Power load calculations and control system architecture.
   f) Validation of Shop drawings, mounting details and technical submittals.
   Any inadequacy in design resulting in non-achievement of specified illumination levels, uniformity, aesthetic appearance, glare control, colour consistency or performance requirements shall be rectified by us or through Bidder at no additional cost to the Employer.

3**. Product Authenticity and Quality Assurance**
   We certify that all luminaires, drivers, controllers, power supplies, accessories and associated equipment supplied under this project will be:
   a) New, genuine and provided by us.
   b) Free from manufacturing defects.
   c) Supplied through authorized channels only.
   d) Traceable through serial numbers and manufacturing records.
   e) Conforming to approved technical specifications.
   We shall not permit supply of counterfeit, refurbished products for this project.

4. **Compliance with Standards and Test Certifications**

We undertake that all offered products shall comply with applicable standards and shall be supported by valid reports/certificates (as defined in bid documents) including, wherever applicable:

a) LM-79 Test Report.
b) LM-80 Test Report.
c) TM-21 Lumen Maintenance Report.
d) Photometric (IES) Files.
e) IP Test Certificates.
f) IK Test Certificates.
g) Electrical Safety Test Reports.
h) BIS Certification (where applicable).
i) Surge Protection Test Reports.

5. **Performance Commitment**

We certify that the offered luminaires shall meet the Tender Specification and performance requirements.

6. **Technical Support During Site Execution**

We undertake to provide complete technical support throughout the project period including:

a) Review and approval of installation drawings.
b) Site visits by qualified OEM engineers.
c) Supervision of fixture mounting and aiming.
d) Assistance during installation, testing and commissioning.
e) Programming and commissioning of lighting control systems.
f) Training of Employer's personnel and maintenance staff.

In case any deficiency is observed due to design shortcomings, product defects, control system malfunction or OEM-related issues, we shall arrange the rectification of the same promptly without any additional financial implication to the Employer.

7. **Warranty, DLP (defect Liability Period) and CAMC (Comprehensive Annual Maintenance Contract) Commitment**

We undertake to support the project throughout:

A. Defect Liability Period (DLP): Two (2) years from the date of issue of Handing over Certificate by Client/ Employer.
B. Comprehensive Annual Maintenance Contract (AMC): Three (3) years beyond completion of DLP.

During DLP and AMC periods, we shall:

a) Provide technical support to the Bidder and Employer.
b) Ensure availability of spares and replacement components.
c) Support troubleshooting and fault rectification.
d) Replace defective OEM-manufactured components attributable to manufacturing defects.
e) Provide firmware/software updates wherever applicable.

8. **Availability of Spares**

We guarantee availability of critical spares, drivers, controllers and accessories for a minimum period of Ten (10) years from commissioning of the project.

9. **Non-Discontinuation Commitment**

We certify that the offered products are current production models and are not scheduled for discontinuation within the next five (5) years. In the event of discontinuation, equivalent or superior replacement products shall be provided without affecting system performance.

10. **Back-to-Back Support**
    We shall provide back-to-back technical support and warranty assistance to the authorized bidder and Employer throughout the contract period including DLP and CAMC duration.

11. We certify that we have our own NABL with accredited lab certificate and shall submit the test report of proposed Light Fixtures.
12. We certify that we shall submit valid ISO: 9001, ISO:14001, ISO: 45001 certificates.

13. **Liability for Product Defects**
    Any failure attributable to manufacturing defects, design deficiencies, poor material quality, photometric non-compliance or failure to meet specified performance criteria shall be addressed by us at our own cost.

14. **Employer's Right of Direct Access**
    The Employer shall have the right to directly approach the OEM for verification of product authenticity, warranty status, technical support, spare availability and resolution of critical technical issues during the contract period.

15. **Validity**
    This Certificate-cum-Authorization shall remain valid for the entire duration of tender evaluation, execution of works, commissioning, DLP and AMC periods associated with the subject project.

    The Employer reserves the right to verify the authenticity of this certification and the claimed joint project experience directly from the OEM.
    Failure to submit such certification shall render the bid non-responsive.

    We hereby certify that the above information is true and correct and undertake to honor all commitments stated herein.

    For M/s _____ (OEM Name)

    Authorized Signatory
    Name: _____
    Designation: _____
    Mobile: _____
    Email: _____
    Company Seal

Section 1: Instructions to Bidders

This Section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening, evaluation of bids, and award of contract.

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NCRTC

A. General	
1. Scope of Bid	1.1 In connection with the Invitation for Bids indicated in the Bid Data Sheet **(BDS)**, National Capital Region Transport Corporation Ltd. (NCRTC), hereinafter referred to as the 'Employer', issues this Bidding Document for the Procurement of Works as specified in Section 6 (Employers Requirements). The name, identification, and number of contract(s) are provided in the **BDS**. 1.2 This Bidding Document is not transferable.
	1.3 Throughout this Bidding Document, (a) the term "in writing" means communicated in written form and delivered against receipt; (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and (c) "day" means calendar day. (d) "week" means a period of seven days.
	1.4 Instructions of using e-Procurement Portal of NIC for Bid Searching, Preparation and Submission: **Instructions of using e-Procurement Portal for Bid Searching, Preparation and Submission:** The Bidders are required to submit soft copies of their bids electronically on the e-Procurement Portal of NIC https://etenders.gov.in/eprocure/app, using valid DSC. The instructions given below are meant to assist the bidders in registering on the e-Procurement Portal, prepare their bids in accordance with the requirements and submitting their bids online on the e-Procurement Portal. More information useful for submitting online bids on the Portal may be obtained on the same portal of NIC. 1) Bidders are required to enroll on the above-mentioned e-Procurement Portal by clicking on the link "Online bidder Enrollment" on the Portal which is free of charge. In case of intended Joint Venture Lead partner shall enroll on the above-mentioned e-Procurement Portal. 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts. 3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the e-Procurement Portal. 4) Upon enrolment, the Bidders will be required to register their valid Digital Signature Certificate ("**DSC**") (Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify /nCode / eMudhra etc.), with their profile. 5) Only one valid DSC should be registered by a Bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.

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6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR BIDDING DOCUMENTS

1) There are various search options built in the e-Procurement Portal, to facilitate bidders to search active bids by several parameters. These parameters could include Bid ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for bids, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a bid published on the e-Procurement Portal.

2) Once the bidders have selected the bids they are interested in, they may download the required documents / bid schedules. These bids can be moved to the respective 'My Bids' folder. This would enable the e-Procurement Portal to intimate the bidders through SMS / e-mail in case there is any addendum/corrigendum issued to the Bidding Document.

3) The Bidder should make a note of the unique Bid ID assigned to each bid, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

1) Bidder should take into account any corrigendum/addendum published on the Bidding Document before deadline of submission of Bids.

2) Bidder should go through the IFB and the Bidding Document carefully to understand the documents required to be submitted as part of the bid. It may be noted that, the number of covers in which the Bidding Document have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

3) Bidder, in advance, should get ready the Bidding Document to be uploaded as indicated in the Bidding Document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bidding Document may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

4) To avoid the time and effort required in uploading the same set of standard documents which are required to be uploaded as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" or "Other Important Documents" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process. **Note: *My Documents space is only a repository given to the Bidders to ease the uploading process. If Bidder has uploaded his Documents in***

राष्ट्रीय राजधानी क्षेत्र परिवहन निगम लि. एन.सी.आर.टी.सी. GatiShakti Bhawan, INA, New Delhi-110023 NCRTC National Capital Region Transport Corporation Ltd.

My Documents space, this does not automatically ensure these Documents being part of Technical Bid.

SUBMISSION OF BIDS

1) Bidder should log into the web site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

2) The DSC used for uploading of the bid submission shall be of the person duly authorized through power of attorney (POA) by the Bidder.

3) The Bidder has to digitally sign and upload the required Bidding Document one by one as indicated in the Bidding Document.

4) Bid processing fee by e-Procurement Portal is NIL.

5) Bid Security: Bidder should submit the Bid Security as per the instructions specified under ITB 19 of the bidding document.

6) Bidders are requested to note that they should necessarily submit their Price Bids in the format provided and no other format is acceptable. If the Price Bid has been given as a standard BOQ format with the Bidding Document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BOQ file, open it and complete the unprotected cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the Bidder should save it and submit it online, without changing the file name. If the submitted BOQ file is found to be modified or altered or substituted the bid shall be treated as non-responsive and shall be rejected.

   (Note:- Financial Bid and Price Bid are synonymous wherever mentioned in the Bidding Document)

7) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

8) All the documents being uploaded by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128-bit encryption technology. Data storage encryption of sensitive fields is done. Any Bidding Document*)* that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys.

9) The uploaded Bidding Document*)* becomes readable only after the bid opening by the authorized bid openers.

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	10) Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details. 11) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings. **ASSISTANCE TO BIDDERS** 1) Any queries relating to the Bidding Document and the terms and conditions contained therein should be addressed to the Bid Inviting Authority for a bid or the relevant contact person indicated in the bid. 2) Any queries relating to the process of online bid submission or queries relating to e-Procurement Portal in general may be directed to the 24x7 e-Procurement Portal (CPP) Helpdesk. 3) For any Technical queries related to Operation of the Central Public Procurement Portal Contact at: Tel: The 24 x 7 Telephonic Help Desk Number 0120-4200462, 0120-4001002, 0120-4001005, 0120-6277787. E-Mail: cppp-nic[at]nic[dot]in, support-eproc[at]nic[dot]in
2. Source of Funds	2.1 The required funds have been sourced by the Employer, unless the funding agency is specified in the **BDS**, in such cases ITB 2.2 will be applicable.
	2.2 i) the Borrower or Recipient (hereinafter called "Borrower") indicated in the **BDS** has applied for or received financing (hereinafter called "funds") from the Funding Agency toward the cost of the project named in the **BDS**. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued. ii) payments by the Funding Agency will be made only at the request of the Borrower and upon approval by Funding Agency in accordance with the terms and conditions of the Financing Agreement between the Borrower and Funding Agency (hereinafter called "Financing Agreement"), and will be subject in all respects to the terms and conditions of that Financing Agreement. No party other than the Borrower shall derive any rights from the Financing Agreement or have any claim to the funds.
3. Fraud and Corruption	3.1 The Employer requires that bidders, contractors, sub-contractors and contractor's personnel observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this, the Employer: (a) defines, for the purposes of this provision, the terms set forth below as follows: (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;

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(ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

(iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

(iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;

(v) "abuse" means theft, waste or improper use of assets related to Employer-related activity, either committed intentionally or through reckless disregard;

(vi) "conflict of interest" means any situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations;

(vii) "obstructive practice" means (a) deliberately destroying, falsifying, altering or concealing of evidence material to an Employer's investigation, or deliberately making false statements to investigators, with the intent to impede an Employer's investigation; (b) threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to Employer- investigation or from pursuing the investigation; or (c) Employer reserves the right directly or through their Auditors to inspect accounts, records and other documents relating to the bid submission and contract performance pertaining to contractor, supplier, sub-contractor. Deliberate acts intended to impede the exercise of Employer's contractual rights of audit or inspection or access to information; and

(viii) "integrity violation" including (i) to (vii) above including failure to adhere to the highest ethical standard.

(b) has the right to reject the bid for award if it determines that the Bidder recommended for award or any of its personnel, or its agents and representatives have, directly or indirectly, engaged in corrupt, fraudulent, collusive, abusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;

(c) will sanction a bidder or its successor, including declaring ineligible, for a stated period of time, to participate in Employer's activities, if it at any time determines that the bidder has, directly or through an agent, engaged in corrupt, fraudulent, collusive, obstructive, abusive, conflict of interest, coercive and integrity violation in competing for, or in executing a contract of the employer.

(d) In case it is found during the evaluation or at any time before signing of the Contract or after its execution and during the period of subsistence thereof, that the Bidder has made material misrepresentation or has given any materially incorrect or false information, the Bidder may be

i) disqualified and banned for further business dealings for a period of upto Two (02) years with the Employer

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	forthwith if not yet appointed as the Bidder either by issue of Letter of Acceptance or entering into of the Contract. ii) And if the Bidder has already been issued the Letter of Acceptance or has entered into the Contract, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this Bidding Document, be banned for further business dealings with the Employer for a period of upto Two (02) years, by a communication in writing by the Employer to the bidder, without the Employer being liable in any manner whatsoever to the Bidder or the bidder, as the case may be. Further the Contract of the Bidder may be terminated and the decision of Employer in this regard shall be final and binding on the bidder. In case the Contract is terminated, Employer shall forfeit and appropriate the Performance Security (to be treated as mutually agreed pre-estimated compensation and damages payable to the Employer for, inter alia, time cost and efforts of the Employer), without prejudice to any other right or remedy that may be available to the Employer. iii) In case the Bidder is a JV, the above provisions shall be applicable on all the partners of the JV.
4. Eligible Bidders	4.1 A Bidder may be a natural person, private entity, or government-owned enterprise subject to ITB 4.5—or any combination of them ("**Joint Venture**" or "**Consortium**") (as the case may be) Incorporation of Joint Venture is not mandatory. Throughout this bidding document, including under Section 1, Section 2, Section 3, and Section 4, the expressions "Joint Venture" or "JV" means a joint venture, association, consortium or other unincorporated grouping of two or more persons/Entities, whether in the form of a partnership or otherwise. Similarly, in the context of Joint Venture, throughout the bidding document, the word "leader", as stipulated under the General Conditions of Contract is synonymous with the word "Representative" and with the words "lead partner" and with "Lead Partner"; the word "member" is synonymous with the word "partner" and with "Partner"; and the word "members" is synonymous with "partners" and with "Partners". (a) In case of Single Entity (An entity that cannot be further differentiated into units with their own legal identities): i.) Submit Power of Attorney (As per Form ELI-4) authorizing the signatory of the bid to commit the bidder. ii.) Bidder shall also furnish Form ELI-1 and documents required therein with their technical submission. (b) In the case of a Joint Venture, i.) Lead Partner must have highest share participation in the Joint Venture and no Joint Venture partner shall have less than 26% participation in the JV., or as specified in **BDS**. In case of JV, change in constitution or percentage participation shall not be permitted at any stage after the bid submission otherwise the bidder shall be treated as non-responsive. ii.) all partners shall be jointly and severally liable; and iii.) the Joint Venture shall nominate a Representative who shall have the authority to conduct all business

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	for and on behalf of any and all the parties of the Joint Venture during the bidding process and, in the event the Joint Venture is awarded the Contract, during Contract execution. iv.) Submit Form ELI-2, ELI-3, ELI-4 and ELI-5 given in Section 4: Bidding Forms, with their technical bid submission. v.) Submit Power of Attorney by individual partners to the Lead Partner as per the form given in Section 4. vi.) In case a Joint Venture is the successful bidder, the detailed Joint Venture Agreement as per format stipulated in Section 9, Contract Forms shall be entered by the Joint Venture partners. vii.) The duly signed detailed Joint Venture Agreement shall be submitted to the Employer within 28 days of notification of award along with the Performance Security. (c) Non-Local Supplier as defined in Department for Promotion of Industry and Internal Trade (Public Procurement Section) Ministry of Commerce and Industry, vide their letter No. P-45021/2/2017-PP (BE-II) dt 16.09.2020 and available on their website are not eligible to participate in this Bid.
	4.2 a) The Bidder, and all parties constituting the Bidder (including Sub-Contractor if permitted), is/are registered by the Competent Authority, if required so, as per the restrictions under 144(xi) of the General Financial Rules (GFRs) as issued by Letter Number F.7/10/2021-PPD(1) dated 23.02.2023 of Procurement Policy Division, Department of Expenditure (DoE) under Ministry of Finance; Government of India or any subsequent amendment on the subject matter issued by Government of India till Deadline for Bid Submission. b) All the Bidders, irrespective of the Country of incorporation, will also have to certify that they are either not required to be registered OR are registered, if required to do so under 4.2 (a) (Refer Bidding Form UT – 2). c) In the event that the Contract is awarded to a foreign Bidder, such foreign Bidder shall be required to follow Applicable Laws in India as regards services by a foreign bidder. Foreign Bidder will be those Bidders whose country of Registration/Incorporation is other than INDIA.
	4.3 A Bidder shall not have a conflict of interest that affects the bidding process. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in the bidding process if any of, including but not limited to, the following apply: (a) they have controlling shareholders in common; or (b) they receive or have received any direct or indirect subsidy from any of them; or (c) they have the same legal representative for purposes of this bid; or (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence

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the bid of another bidder, or influence the decisions of the Employer regarding this bidding process; or

(e) Bidder participates in more than one bid in this bidding process, either individually or as a partner in a Joint Venture. A Bidder who participate in more than one Bid will cause all of 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 Joint Venture in the same Bidding process. However, subject to any finding of a conflict of interest in terms of ITB 4.3(a)-(d) above a bidder, if acting in the capacity of Sub Contractor in any Bid, may participate in more than one Bid, but only in that capacity.

(f) a Bidder or any of its constituents, Joint Venture partner, associates, parent company, or any affiliated entity, participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or

(g) a Bidder was affiliated for any period(s) during last two years before the date of issue of Invitation for Bids with a firm or entity that has been hired (or is proposed to be hired) to work as Engineer for the subject contract; or

(h) Conflict between consulting activities and procurement of goods, works or non-consulting services (i.e., services other than Consulting Services): such Bidder that has been engaged by the Employer to provide goods, works, or non-consulting services for a project, or any of its affiliates that directly or indirectly Controls, is Controlled by, or is under common Control with such Bidder, shall be disqualified from providing consulting services resulting from or directly related to those goods, works, or non-consulting services. Conversely, such Bidder hired to provide consulting services for the preparation or implementation of the Project, or any of its affiliates that directly or indirectly Controls, is Controlled by, or is under common Control with such Bidder, shall be disqualified from subsequently providing goods or works or non-consulting services (other than Consulting Services) resulting from or directly related to the Consulting Services for such preparation or implementation. This provision does not apply to the various firms (consultants, contractors or suppliers) which together are performing the Contractor's obligations under a turnkey or design and build contract.

(i) Conflict among consulting assignments: Neither consultant (including their personnel and sub-consultants), nor any affiliate that directly or indirectly Controls, is Controlled by, or is under common Control with that firm, shall be hired for any assignment that, by its nature, may be in conflict with another assignment of the consultant.

(j) In the case of the consultant or any entity affiliated with the consultant, is already part of providing any services for the Project for the Employer, the consultant shall ensure that the Proof Checking for those services shall be carried out by an independent third party from an empaneled list (of at least three firms) as decided by the Employer. The cost shall be deemed to be included in the quoted cost. (e.g. a firm working as a detailed design consultant for NCRTC, if selected as a general consultant shall have to get the proof checking of detailed design from a third party from the

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	empaneled list at their own cost. In such cases, the corresponding key experts shall be deployed from the third party selected for the proof checking) (k) Relationship with Employer's Staff: Consultant (including their experts and other personnel, and sub-consultants) that have a close business or family relationship with a professional staff of the Employer (or of the Project implementing agency) who are directly or indirectly involved in any part of: (i) the preparation of the Scope of Work/Terms of Reference, (ii) the selection process for the Contract, or (iii) the supervision of such Contract may not be awarded the Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to the Employer throughout the selection process and the execution of the Contract.
	4.4 The Bidder shall be disqualified if: (a) The Bidder or any of its constituents and/or sub-contractor /sub-consultant included in the bid have been blacklisted/banned for business dealings with Ministry of Housing and Urban Affairs (MoHUA) or by any of its attached or subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance issuing banning of business applicable over all departments with the banning being valid as on the last date of deadline for submission of bids, except in cases where such blacklisting/banning has been withdrawn by Competent Authority or has ceased on the deadline for submission of the bids, for which satisfactory evidence is to be produced. (b) The Partner(s) of an existing Joint Venture which has been blacklisted/banned by Ministry of Housing and Urban Affairs (MoHUA) along with any of its attached and subordinate offices or by any metro rail organizations in India or by Department of Expenditure under Ministry of Finance, shall be allowed to participate in the future Bids of the Employer, if that Partner(s) proves its eligibility with documentary evidence of not having been blacklisted/banned in individual capacity for bidding in other organizations. (c) Any previous contract of the Bidder or of any of its constituents had been terminated for contractor's failure by MoHUA along with any of its attached and subordinate offices or by any metro rail organizations in India at any time starting from 02 years before the deadline for submission of bids. Provided, however, there is no stay order or declaration by any Court against such termination of the Contract or such termination of the Contract has not been revoked. (d) The Bidder or any of its constituents has suffered bankruptcy/insolvency or it is in the process of winding-up or there is a case of insolvency pending before any Court on the deadline of submission of bids or thereafter till finalization of bids. (e) The Bidder is found ineligible by the Employer, in accordance with ITB-3. (f) The Bidder or its constituent(s) has been declared by MoHUA along with any of its attached and subordinate

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	offices or by any metro rail organizations in India to be a poor performer and the period of poor performance is still in force on the deadline for submission of bids. The Bidder shall submit an Affidavit stating that they are not disqualified as per this sub clause (using the Performa given in Section 4) in the Bid submission. (g) The Bidder or any of its constituents and/or sub-contractor/sub-consultant included in the bid have been debarred by MoHUA or by any of its attached or subordinate offices or by any metro rail organisations in India or by Department of Expenditure under Ministry of Finance if : I. He has been convicted of an offence under: The code on Wages, 2019 or the Code on Social Security, 2020 or the Industrial Relations Code, 2020 or the Occupational Safety, Health and Working Conditions Code, 2020; or II. He has been debarred on more than one occasion for- a. Failure to pay wages to employees engaged under the contracts; or b. Failure to remit statutory contributions towards social security, as required under applicable laws, in respect of such employees engaged under the contracts, and, any department mentioned at (g) above has been required to make payment of such wages or contributions due to default by the bidder. The above debarment is being valid as on the last date of submission of bids, except in cases where such debarment has been withdrawn by Competent Authority or has ceased on the deadline for submission of the bids, for which satisfactory evidence is to be produce.
	4.5 Government-owned enterprises in the Employer's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under commercial law, and (iii) are not a dependent agency of the Employer.
	4.6 A Bidder shall not be under suspension from bidding by the Employer as the result of the execution of a Bid–Securing Declaration. 4.7 Bidders shall immediately inform the Employer, in case Bidder ceased to fulfill eligibility or Employer requests to provide evidence for their continued eligibility in terms of ITB 4. In case the Bidder fails to inform the Employer or submits a false affidavit, the Employer has the right to reject the bid and Bidder shall also be liable for Banning of Business dealings by the Employer for a period of upto 02 (two) years.
5. Eligible Materials, Equipment and Services	5.1 At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services. The materials, equipment and services to be

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	supplied under the Contract shall have their origin from countries as defined in ITB 4.2.
	5.2 For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced, or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.
B. Contents of Bidding Document	
6. Sections of Bidding Document	6.1 The Bidding Document consist of Parts I, II, and III, which include all the sections indicated below, and should be read in conjunction with any addenda/corrigenda issued in accordance with ITB 8. **PART I Bidding Procedures** Invitation for Bids (IFB) Section 1 - Instructions to Bidders (ITB) Section 2 - Bid Data Sheet (BDS) Section 3 - Evaluation and Qualification Criteria (EQC) Section 4 - Bidding Forms (BF) Section 5 - Nationality **PART II Requirements** Section 6 A: Employer's Requirement/ Scope of Work Section 6 B: Technical Specification Section 6 C: SHE Conditions of Contract Section 6 D: Reference Documents (Bid drawings etc.) **PART III Conditions of Contract and Contract Forms** Section 7 - General Conditions of Contract (GCC) Section 8 - Part A: Appendix to Bid Section 8 - Part B: Particular Conditions of Contract (PCC) Section 9 - Contract Forms (CF) **FINANCIAL BID / PRICE BID IN EXCEL FORMAT**
	6.2 The IFB issued by the Employer is a part of the Bidding Document.
	6.3 The Employer is not responsible for the completeness of the Bidding Document and their addenda/corrigenda, if they were not obtained directly from the source stated by the Employer in the IFB. The complete Bidding Document can be viewed / downloaded by the Bidder from e-Procurement Portal of NIC https://etenders.gov.in/eprocure/app or can be viewed at official website of NCRTC www.ncrtc.in as mentioned in critical date in the IFB.
	6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.
7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting	7.1 A Bidder requiring any clarification on the Bidding Document shall contact the Employer through e-Procurement Portal of NIC https://etenders.gov.in/eprocure/app or through authorized e-mail id of Employer or raise its inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The deadline for seeking clarification by the Bidder shall

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		not be later than 14 days (up to 17:00 Hrs. IST) prior to the deadline for submission of bids. The Employer will respond to any request for clarification at least 07 days prior to the deadline for submission of bids through e-Procurement Portal or through authorized e-mail id of Employer. The Employer may, if necessary, amend the Bidding Document as a result of a request for clarification, then it shall do so following the procedure under ITB 8 and ITB 22.2.
	7.2	The Bidder is advised to submit its bid after visiting and examining the Site of Works and its surroundings and obtaining for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a Contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
	7.3	The Bidder and any of its personnel or agents will be granted permission by the Employer to enter its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
	7.4	The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the **IFB**. The purpose of the meeting will be to clarify issues pertaining to the Bid.
	7.5	The Bidder is requested to upload the Pre-Bid queries on the e-Procurement Portal or send in authorized e-mail id of Employer not later than the date and time as mentioned in ITB 7.1 as per the standard proforma provided in Section-4 of the Bidding Document (Form-PQ of Bidding Forms).
	7.6	The text of the questions raised, (including questions raised during the meeting in writing) without identifying the source, and the responses given, together with any responses prepared after the meeting will be uploaded on e-Procurement Portal, https://etenders.gov.in/eprocure/app. Any modification to the Bidding Document that may in the sole discretion of the Employer become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the use of an Addendum/Corrigendum pursuant to ITB 8 and ITB 22.2.
	7.7	Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.



8. Amendment of Bidding Document	8.1	At any time prior to the deadline for submission of Bids, the Employer may amend the Bidding Document by issuing addenda/corrigenda.
	8.2	Any addendum/corrigendum issued shall be part of the Bidding Document and shall be uploaded on e-Procurement Portal https://etenders.gov.in/eprocure/app. The onus is on the Bidders to visit the e-Procurement Portal to see the addenda/corrigenda published by the Employer.
	8.3	To give prospective Bidders reasonable time in which to take an addendum/corrigendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 22.2
C. Preparation of Bids		
9. Cost of Bidding	9.1	The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
10. Language of Bid	10.1	The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in English language. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation by an authorized translator of the relevant passages in English language. The translated document such as Power of Attorney, supporting documents of Bidder's information (i.e. Certificate of Incorporation, Memorandum of Association, Article of Association, Board Resolutions), documents submitted pertaining to Evaluation and Qualification Criteria (i.e. Experience Certificates, Financial Statements etc.) shall also be attested by Embassy of India in the Bidder's country.
11. Documents Comprising the Bid	11.1	The Bidder shall submit their bid on-line on e-Procurement Portal https://etenders.gov.in/eprocure/app as mentioned in para ITB 21. The Bid shall comprise two parts submitted simultaneously, one called the Technical Bid containing the documents listed in ITB 11.2 and the other the Price Bid containing the documents listed in ITB 11.3.
	11.2	The Technical Bid shall comprise the following: (a) Letter of Technical Bid; (b) alternative Bids, if permissible, in accordance with ITB 13; (c) Technical Proposal in accordance with ITB 16; (d) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract; (e) Bid-Security in accordance with ITB 19 and ITB 21; (f) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2; (g) Details of MSEs/Startup Business/ Make in India in accordance with ITB 36 (h) duly filled bidding forms along with relevant document as mentioned in Section-4: Bidding Forms (i) Any other document required in the **BDS**.

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	11.3 The Price Bid in Excel format shall comprise the following: (a) Letter of Price Bid; (b) alternative price Bids, at Bidder's option and if permissible, in accordance with ITB 13; (c) completed Price Schedules, in accordance with ITB 12 and ITB 14; (d) Any other document required in the **BDS**.
	11.4 In addition to the requirements under ITB 11.2, Bids submitted by a Joint Venture shall include a copy of the Joint Venture Agreement (In case of existing Joint Venture) / Intended Joint Venture Agreement as per Form ELI-3 of Bidding Form.
12. Letters of Bid and Schedules	12.1 The Letters of Technical Bid and Price Bid, and the Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section 4 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. Bid, if found with modification or alteration or substitution it may be considered as non-responsive and Employer reserves the right to reject the Bid. All blank spaces shall be filled in with the information requested.
13. Alternative Bids	13.1 Unless otherwise indicated in the **BDS**, alternative Bids shall not be considered.
	13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the **BDS**, as will the method of evaluating different times for completion.
	13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.
	13.4 When specified in the **BDS**, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified in the **BDS** and described in Section 6 (Employer's Requirements). The method for their evaluation will be stipulated in Section 3 (Evaluation and Qualification Criteria).
14. Bid Prices and Discounts	14.1 The prices and discounts quoted by the Bidder in the Letter of Price Bid and in the Bill of Quantities shall conform to the requirements specified below.
	14.2 The Bidder shall quote the prices of the works in accordance with the instructions mentioned in **BDS** out of the following; a) The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities and shall be evaluated accordingly. OR

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	b) In the Bill of Quantities (BOQ), unit, quantity and unit rates and thereby the amount against each item have been indicated. From this Percentage BOQ, price of each schedule has been worked out and indicated in the summary sheet in BOQ. The Bidder shall quote rates as single percentage above/below/at par in figures for each schedule as per format in the 'Percentage BOQ'. Failure to quote the "% excess" or "% less" or "at par" in any schedules shall be treated as "at par" irrespective of any figure in percentage (if indicated) and shall be evaluated accordingly. OR c) In the Bill of Quantities (BOQ), unit, quantity and unit rates and thereby the amount against each item have been indicated. From this Percentage BOQ, price of each schedule has been worked out and indicated in the summary sheet in BOQ. The Bidder shall quote rates as single percentage above/below/at par in figures on total amount of all Schedules as per format in the 'Percentage BOQ'. Failure to quote the "% excess" or "% less" or "at par" for the total amount of schedules shall be treated as "at par" irrespective of any figure in percentage (if indicated) and shall be evaluated accordingly. OR d) The Bidder shall quote lumpsum price for the work as mentioned in the Bill of Quantity. In case Bidder fails to quote the lumpsum amount in the Price Bid for lumpsum schedules, in such case the offer of the Bidder shall be considered non-responsive and it shall be summarily rejected. OR e) Any combinations of (a), (b), (c) and (d) as mentioned above.
	14.3 The price quoted in the Letter of Price Bid, in accordance with ITB 12.1, shall be the total price of the Bid. Any additional/other discount if offered by the Bidder shall be mentioned separately in the Letter of Price Bid. Net offered Price Bid shall be considered after deduction of proposed discounts from total Price of Bid. In case of, absence of the total bid price/Net Bid Price in the Letter of Price Bid, bid may be considered as non-responsive and Employer may reserve the right to reject the bid.
	14.4 The Bidder shall quote any unconditional discounts in terms of percentage figure either on total bid price or against individual schedule price so that the discounts can be evaluated by simple arithmetic calculation during financial evaluation of the bids, to arrive at the net total price of the bid. The Bidder shall quote any discounts and the methodology for their application in the Letter of Price Bid, in accordance with ITB 12.1 If the net total price cannot be calculated after application of the methodology of the discount(s) quoted, the bid shall be considered without discount and shall be evaluated accordingly. In case of multiple lots, any discount offered for award of any specific combination of Contract lots(s) has to be quoted separately for each specific combination and to be submitted in Price Bid.
	14.5 Unless otherwise provided in the **BDS** and the Contract, the rates and prices quoted by the Bidder are subject to

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adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract.

(a) In the case of Fixed Price Bid, prices quoted by the Bidder shall be fixed during the currency of the Contract and not subject to variation on any account. A Bid submitted with an adjustable price may be treated as nonresponsive and Employer reserves the right to reject the Bid.

(b) In the case of Adjustable Price, prices quoted by the Bidder shall be subject to adjustment during currency of the Contract to reflect changes in the cost elements such as labor, material, transport, and contractor's equipment in accordance with the provisions of the Conditions of Contract. A Conditional Bid submitted with a fixed price may be treated as nonresponsive and Employer reserves the right to reject the Bid. The indices and weightings shall be taken for this purpose as provided in the sub-clause Adjustments for Changes in Cost as per General Conditions of Contract.

14.6 If so, indicated in ITB 1.1, bids are being invited for individual contracts or for any combination of contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.4, provided the Bids for all contracts are submitted and opened at the same time.

14.7 i. All duties, taxes, and other levies etc. payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder. The total Bid Price, inclusive or exclusive of GST and/or Custom duties, shall be in accordance with the details mentioned in **BDS**.

ii. If custom duty is exempted in the project as specified in the **BDS**, then following provisions shall be applicable:

a) The Goods/Plants/ Services/Works (as defined under General Conditions of Contract) imported for the project execution are exempt from whole of the duty of customs leviable thereon under first Schedule to the Customs tariff Act 1975 (51 of 1975) and the whole of the special duty of customs leviable under section 68 of the Finance (No. 2) Act 1996 as per the provision of the Notification No. 84/97 dated 11th Nov 1997, as amended time to time. (**Copy of Notification attached in PCC for ready reference**).

b) Employer will facilitate the Contractor with necessary certificate in this regard. The responsibility to avail the exemption of Custom Duty shall solely rest with the Contractor. The Contractor shall also be solely responsible for custom clearing of the Goods/Plants/ Services/Works (as defined under General Conditions of Contract). Importer on Record can be NCRTC or domestic Bidder or domestic Joint Venture partner(s). The Contractor shall maintain records of the Goods/Plants/ Services/Works (as defined under General Conditions of Contract) imported for the project execution and actual utilization of the same for the

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	project execution. The Contractor shall be fully responsible for any loss or misuse of these imported Goods/Plants/ Services/Works (as defined under General Conditions of Contract). c) In case Deemed Export Benefits under Foreign Trade Policy is available, Contractor shall take advantage and consider this in the bid price. Employer shall facilitate the Contractor with reasonable documents for availing the Deemed Export Benefits. However, the responsibility to avail the Deemed Export Benefits or otherwise as extended in accordance with the law of the land shall solely rest with the Contractor. iii. GST shall be paid as applicable in accordance with the prevailing rules of Government of India on submission of GST invoices as per the prevailing Government rules. Goods and Service Tax [GST] will be paid extra as applicable on the submission of GST Invoices for first Interim payment certificate. The subsequent Interim payment certificate shall be processed for payment upon submission of documentary evidence in the form of Challans/GSTR Form-1 as the case maybe towards payment of GST collected on the previous Interim payment certificates to the GST Authorities. In case proof of GST deposited to authorities is not submitted with IPC, the same will be processed after withholding the GST amount (which was paid on previous IPC to contractor). The same withhold amount will be released only after the submission of documentary evidence (as stated above) to employer. However, if subsequent bills are raised before the return submission date of previous Bill period, the documentary evidence towards payment of GST shall be provided within 7 days from the date of such return filling. The Final payment certificate/single payment certificate, payment shall be released on the undertaking by the contractor/supplier for providing evidence within 07 days from the due date of such return filing for final bill based on GST provision for due dates.
15. Currencies of Bid and Payment	15.1 Bidder shall quote their offer only in INR in the Price Bid unless specified in the **BDS**.
	15.2 Unless specified in the **BDS**, bidders expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country and wishing to be paid accordingly may indicate the other currencies schedule wise in the Schedule of Payment Currencies (in maximum three freely convertible foreign currencies in addition to local currency i.e. INR) included in the Price Bid.
	15.3 Bidders may be required by the Employer to clarify their foreign currency requirements are reasonable in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder to substantiate the amounts included in the unit rates and prices shown in the Schedule of Payment Currencies. If the Employer considers that the requirement of foreign currencies are not reasonable, then

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	Employer reserves the right to consider the Bid as non-responsive.
	15.4 A. For evaluation purpose; (i) For Section 3: Evaluation and Qualification Criteria (EQC) purpose, the currency other than INR to be converted to INR shall be as per Notes of Section 3: Evaluation and Qualification Criteria. (ii) For the purpose of Price Bid comparison foreign currency part shall be converted to Equivalent INR by adopting exchange rate 28 days prior to the latest deadline for submission of Bids. (iii) The exchange rate shall be as per the website of RBI. In case the reference rate of particular currency on a given date is not available on the website of RBI, it will be taken as per the website of Financial Benchmark India Private Limited (FBIL) as specified in the website of RBI. In case the exchange rate of the particular currency is not available on any date in both the websites as mentioned above, then the selling exchange rate as per the website of the Central Bank of that country to which the currency belongs will be taken to convert that currency to INR. In case the exchange rate of that currency is not directly available in INR then the currency will be first converted to USD and then re-converted to INR as per para above. (iv) Bidder in its Bid shall indicate the source used with documentary evidence for conversion and conversion rates used for converting foreign currency into INR. B. For payment purpose; (i) The Advance Payment/Interim Payment Certificate (IPC)/ Final Payment Certificate (FPC) (without Price Variation adjustment) payment shall be claimed in INR and the invoice shall be submitted in the currencies as per the proportion stipulated in Schedule of Payment Currencies (Section 4, Bidding Forms) by using the reference rate of the conversion of 28 days prior to the last deadline of submission as specified in para A(i) & (ii) above. (ii) Adjustment on account of Price Variation shall be calculated separately in INR, for each period, between two successive dates of measurements for bills and paid along with each bill or separately as claimed by the contractor. Payment against the price variation shall be made to the contractor in accordance with the proportion stipulated in Schedule of Payment Currencies (Section 4, Bidding Forms) by using the reference rate of the conversion on the last day of the period to which a particular interim payment certificate is related as per the methodology specified in para A(i) & (ii) above.
	15.5 Foreign currency requirements generally include the following; (a) expatriate staff and labor employed directly on the Works; (b) social, insurance, medical and other charges relating to such expatriate staff and labor, and foreign travel expenses;

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	(c) imported materials, both temporary and permanent, including fuels, oil and lubricants required for the Works; (d) depreciation and usage of imported Plant and Contractor's Equipment, including spare parts, required for the Works; (e) foreign insurance and freight charges for imported materials, Plant and Contractor's Equipment, including spare parts; and (f) overhead expenses, fees, profit, and financial charges arising outside the Employer's country in connection with the Works.
	15.6 Payment shall be made electronically in the account of the Contractor as per the details provided by the Contractor. (i) In case the Contractor is an incorporated Joint Venture, the payment shall be made only in the name of Joint Venture. (ii) In case the Contractor is an un-incorporated JV, if requested by the contractor, direct payment to the individual partners/ Lead Partner, if so authorized, of the Joint Venture can be made on joint certification by the authorized representatives of individual constituent partners, after making requisite recoveries /deduction from the gross payment. In this case, a notarized **Memorandum of Understanding (MOU)** (Section 9: CF) jointly signed by authorized representatives of all the constituent partners of the Joint Venture Joint Venture to this effect need to be submitted to the Employer before commencement of the Work. For Tax purpose, Joint Venture or Individual partners of Joint Venture, as the case may be, shall be required to submit individual Tax invoices. All payments, will be subject to deduction of tax at source in accordance with the provisions of the Indian Income tax Act, Indian Goods & Services Tax laws and any other applicable laws, including any Withholding Taxes (as per applicable provisions/Lower Tax deduction certificate issued by Tax Authorities) etc. Building & Others Construction Workers (BOCW) Cess shall be applicable on Contract Price (excluding GST). The Contractor / individual partners of Joint Venture shall take necessary clearance/exemption and registration certificate for Income Tax/GST/Other Taxes, as applicable.
16. Documents Comprising the Technical Proposal	16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule, and any other information as stipulated in Section 4 (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.
17. Documents Establishing the Qualifications of the Bidder	17.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).
	17.2 In case Domestic Preference is applicable as specified in **BDS**, Domestic Bidders, individually or in Joint Ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 36.
18. Period of Validity of Bids	18.1 Bids shall remain valid for the period specified in the **BDS** after the bid submission deadline date prescribed by the Employer.

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	In case of Bid Validity is of shorter period than the Employer has the right to reject the Bid as non-responsive.
	18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended upto the date mentioned in the letter of request for extension. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid.
19. Bid Security	19.1 The Bidder shall furnish as part of its bid, a bid security in stipulated form with requisite validity and for the said amount of Currency as specified in clause 1.2 (a) of IFB (Bid Schedule/Details). a. Bidders are required to upload the duly signed scanned copy of the Bid Security in the E-Procurement portal of NIC (CPP Portal) with the offer on e-procurement portal. However, Original of the same Bid Security which was submitted with the offer on e-Procurement Portal of NIC should also be submitted by the Bidders at the Employer's address indicated in the **BDS**/IFB before the date and time specified in ITB 22.1. The Original Bid security received in physical form should be the original Bid Security instrument of the scanned copy uploaded in the e-bidding portal of NIC along with the Bid and no deviation whatsoever shall be accepted in this regard. b. The bidder shall be considered as non-responsive in case original Bid Security (in physical form) which was uploaded with the bid on e-bidding Portal, is not submitted to NCRTC before the date and time specified in ITB 22.1. 19.2 The bid security shall be, at the Bidder's option, in any of the following forms: (a) A Cashiers or Banker's certified cheque or Bank draft drawn on a Scheduled Commercial Bank in India in favour of "National Capital Region Transport Corporation Ltd." payable at New Delhi; or (b) An unconditional bank guarantee (BG) using the Form given in Section 4: Bidding Forms. The bank guarantee shall be from a bank having minimum net worth of over INR 5000 million from the specified banks as under: (i) a Scheduled Commercial Bank in India, or (ii) a Foreign Bank which do not have operations in India is required to provide a counter-guarantee by a Scheduled Commercial Bank in India, or a Foreign Bank which has a correspondent bank in India is required to submit the Bank Guarantee through the correspondent bank in India, (c) The Scheduled Commercial Bank issuing the Bank Guarantee preferably on **"Structure Financial Messaging System (SFMS)" platform**. In case if Bank Guarantee is issued on SFMS platform then a separate advice of the BG shall invariable be sent by the issuing bank to the Employer's Bank through SFMS.

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Further, the Bid Security in Original form along with a copy of "MT760COV/IFN760 (in case of issue of Original Bank Guarantee message) / MT767COV/IFN767 (in case of Bank Guarantee amendment message) Report" sent by the BG issuing Bank Sealed in an envelope shall be submitted as stated in clause 1.2 (a) of IFB.

The Issuing Bank shall send the SFMS to:

Beneficiary: National Capital Region Transport Corporation Limited
Bank Name: HDFC Bank
Account No. 50200029737870
IFSC Code: HDFC0000003

(d) Fixed Deposit Receipt (FDR) of a Scheduled Commercial bank/ Post office based in India duly pledged in favour of "National Capital Region Transport Corporation Ltd."

The validity / Maturity date of the bid security shall be as per the date mentioned in IFB under clause 1.2 (a) (Bid Schedule/Details), or up to the date mentioned in the letter of request for extension, if any under ITB 18.2.

(e) e-Mode i.e., RTGS/NEFT/ECS/IMPS for credit of the designated account of NCRTC as per the details mentioned in IFB Clause no. 1.2

19.3 Any bid not accompanied by an enforceable and compliant bid security, as required in accordance with ITB 19.1, the Employer has the right to reject such bid.

19.4 The bid security of unsuccessful Bidders during first stage i.e. technical evaluation etc. should be returned within 30 days of declaration of result of first stage i.e. technical evaluation. Bid security of the technically qualified bidders other than successful bidder should be returned to them within 30 days of award of the work to successful bidder.

19.5 The bid security of the successful Bidder should be returned after receipt and confirmation of the Performance security and signing of the Contract Agreement by successful bidder.

19.6 The bid security shall be forfeited:

(a) if a Bidder withdraw/ substitute/ modify its bid during the interval between the deadline for submission of bids and expiration of the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid or any extension thereof.
(b) if a Bidder misrepresents or omits the facts in order to influence the procurement process;
(c) if the successful Bidder fails to:

(i) sign the Contract in accordance with ITB 45;
(ii) furnish a performance security in accordance with ITB 44;
(iii) accept the correction of its Bid Price pursuant to ITB 34.2; or
(iv) furnish a domestic preference security if so required.

(d) if the affidavit submitted by the bidder or its constituents in pursuance to ITB clause 4.4 or any of the declarations of Letter

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	of Technical Bid submitted by the bidder has been found to be false at any stage during the process of bid evaluation. (e) In case the bidder who has been exempted for submission of Bid Security being Startup Business, and; (i) withdraws his Bid during the period of Bid validity; or (ii) becomes the successful bidder, but fails to commence the work (for whatsoever reasons) as per terms & conditions of bid; or (iii) refuses or neglects to execute the contract; or (iv) fails to furnish the required Performance Security within the specified time, Then such bidders shall be debarred from participating in future bids for a period of upto **02 year** from the date of discharge of bid / date of cancellation of LOA / 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 Bid Cost / Bid Security. (f) 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. 19.7 In case the bid security is submitted in the form of Bank Guarantee/FDR, the same shall be subject to verification for its genuineness by the Employer. 19.8 If the bid security is required as per ITB 19.1, the bid security of a Joint Venture shall be in the name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of bidding, the bid security shall be in the name of any or all of the Joint Venture partners. 19.9 In case the Bank Guarantee/FDR is submitted in the name of any partner of the JV, then the bidder shall also submit undertaking as per Form UT-5.
20. Format and Signing of Bid	20.1 The Technical Bid (comprising of documents specified in ITB 11.2) and Price Bid (comprising of documents specified in ITB 11.3) shall be submitted online on e-Procurement Portal of NIC https://etenders.gov.in/eprocure/app only in accordance with the requirements of the Bidding Document.
	20.2 Bidding Documents which are to be submitted as scanned documents shall be printed or written in indelible ink (in the case of copies, legible photocopies are also acceptable) and all the pages shall be signed by person or persons duly authorized to sign on behalf of the Bidder before scanning and uploading (in PDF / XLS / RAR / DWF/JPG formats). Bidding Document may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document. Bidders are advised to ensure clarity and visibility of the contents of scanned documents before uploading the same. All pages of the Bid, where, entries or amendments have been made, shall be initialed by the person or persons signing the Bid. This authorization shall consist of a written confirmation as specified below and shall be attached to the bid. The name and position held by each person signing the authorization must

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	be typed or printed below the signature. If a Bidder submits a deficient authorization, the Bid shall not be rejected in the first instance. The Employer shall request the Bidder to submit an acceptable authorization within 14 (fourteen) days. Failure to provide an acceptable authorization within the specified period the Employer reserves the right to reject the Bid. The written confirmation of authorization to sign on behalf of the Bidder shall consist of: a. In case of Private/Public Companies, a Power of Attorney (POA) from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution, Memorandum of Association and Article of Association shall also be submitted. b. In case of proprietorship bidders, Power of Attorney and Affidavit by the Proprietors. c. In case of partnership bidders, Power of Attorney and notarized/registered Partnership deed duly signed by all the partners. d. In case of Limited Liability partnership (LLP), a POA from the legal representative of the company who has been authorized by the Board Resolution, constitution of the legal entity, articles of incorporation or other valid legal instruments acceptable to the Employer. Copy of Board Resolution shall also be submitted, where applicable. e. In case of Joint Venture, Power of Attorney duly signed by individual partners to the Lead partner as per the form given in Section-4 with stipulated documents.
	20.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.
D. Submission and Opening of Bids	
21. Submission of Bids	21.1 Bidders shall upload their bid submission online in accordance with ITB 1.4 on e-Procurement Portal https://etenders.gov.in/eprocure/app within the stipulated date and time as mentioned in ITB 22.1. The Bidder shall ensure that they retain a copy of the receipt/acknowledgement of their Bid submission which is generated by the system upon successful submission of Bid online. 21.2 Bids sent through any other means of transmission except as mentioned above shall be treated as invalid and shall stand rejected. 21.3 **No details about price bid shall be submitted / disclosed directly or indirectly in the technical bid and in such case, the Bid shall be rejected.** 21.4 Bidders are required to upload the duly signed scanned copy of the Bid Security /Relevant details of MSEs / Startup Registration in the E-Procurement portal of NIC (CPP Portal) with the offer on e-procurement portal. However, Original of the same Bid Security which was submitted with the offer on e-Procurement Portal of NIC should also be submitted by the

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	Bidders at the Employer's address indicated in the **BDS**/IFB before the date and time specified in IFB. The Original Bid security received in physical form should be the original Bid Security instrument of the scanned copy uploaded in the e-bidding portal of NIC along with the Bid and no deviation whatsoever shall be accepted in this regard. The **bid** shall be considered as non-responsive in case of non-**submission** of copy of Startup Registration (in case exemption for Bid Security is claimed by the Bidder for being startup) in the e-bidding Portal along with submission of bid. The bidder shall also be considered as non-responsive in case original Bid Security which was uploaded with the bid on e-bidding Portal, is not submitted to NCRTC before the date and time specified in ITB 22.1. 21.5 The bidder shall seal the "Original Bid Security" in an envelope. The envelope shall: a. bear the name and address of the Bidder; b. the address of the Authority as mentioned in IFB Clause no. 1.2 (a); and c. bear the specific identification i.e. **Original Bid Security** for Bid No. and Name of Work of this bid as indicated in IFB d. contains the duly signed covering Letter of Bidder through which the Original Bid Security is submitted. The envelope containing the Original Bid Security shall not contain the Price Bid /Financial Bid of the Bidder. If the envelope is found containing Price Bid/ Financial Bid (in complete/ partial form) either signed or unsigned, then in such case, the Bid of the Bidder shall be considered as non-responsive and rejected. 21.6 Original Bid Security in physical form submitted after due date and time shall not be accepted and online bids of such bidders shall be rejected. NCRTC shall not be responsible for delay, loss or non-receipt of 'Original Bid Security' sent by post / courier. 21.7 NCRTC shall not be responsible for "Original Bid Security" delivered to any other place / person in NCRTC other than the designated authority.
22. Deadline for Submission of Bids	22.1 Bids must be submitted no later than the date and time through e-Procurement Portal as specified in the IFB.
	22.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
23. Late Bids	23.1 Submission of Bids shall be closed on e-Procurement Portal at the date & time of submission as prescribed in ITB 22.1 after which no bid can be uploaded. Any bid received (complete or in parts) after deadline of Bid submission by any other means shall not be considered and bids or any other document associated with the Bid submitted on e-Procurement Portal before deadline of Bid submission shall only be evaluated.

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24. Withdrawal, Substitution, and Modification of Bids	24.1 The Bidder may modify, substitute or withdraw its Bid after submission prior to the Bid Submission Deadline. No bid shall be modified, substituted or withdrawn by the Bidder on or after the Bid Submission Deadline and Time. For modification of Bid, bidder has to detach its old Bid from e-Procurement Portal (https://etenders.gov.in/eprocure/app) and upload / resubmit modified bid. For withdrawal of bid, Bidder has to click on withdrawal icon at e-Procurement Portal and can withdraw its Bid. Before withdrawal of a bid, it may specifically be noted that after withdrawal of a bid for any reason, Bidder cannot re-submit Bid again.
	24.2 Any documents submitted by the bidder who withdraw the bid in accordance with ITB 24.1 shall not be opened.
	24.3 No Bid shall be withdrawn/ substituted/ modified by the bidder during the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid or any extension thereof. Withdrawal/ Substitution/ Modification of a bid during this period shall result in forfeiture of the bid security.
25. Bid Opening	25.1 The Employer shall conduct the electronic opening of Technical Bids on e-Procurement Portal as per the schedule date and time. The opening of the Technical Bids and subsequent details can be viewed by the bidders by logging on the e-Procurement Portal.
	25.2 The Price Bid submitted online on e-Procurement Portal will remain unopened in the e-Procurement Portal until the date and time of opening of Price Bid. The date and time of the opening of the Price Bid will be notified to all the bidders on e-Procurement Portal whose bid is found to be substantially responsive and technically qualified.
	25.3 The Technical Bids shall be opened one at a time, and the following shall be recorded: a) the name of the Bidder; b) Relevant details of Bid Security/Startup registration certificate, as applicable, and c) any other details as the Employer may consider appropriate. Only e-procurement Bids recorded at bid opening shall be considered for evaluation. No Bid shall be rejected at the opening of Technical Bids.
	25.4 After the evaluation of the Technical Bids, the Employer shall conduct the electronic opening of Price Bids of the bidders who have submitted substantially responsive Technical Bids and are qualified on the basis of evaluation of the Technical Bids. The date and time of the opening of Price Bids will be published through e-Procurement Portal.
	25.5 The Employer will also publish on the e-Procurement Portal, the names of bidders whose bid have not been found substantially responsive to the requirements of the Bidding Document as a result of evaluation of Technical Bid. The Price bids of such technically non-responsive bidders shall not be opened.
	25.6 The Employer shall conduct the electronic opening of Price Bids on e-Procurement Portal. The opening of the Price Bids

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	and subsequent details can be viewed by the bidders by logging on the e-Procurement Portal.
	25.7 On Opening of the Price Bids, Summary of Price Bid Opening and amount quoted by the bidders shall be informed through e-mail to all the Bidders who are found technically qualified.
E. Evaluation and Comparison of Bids	
26. Confidentiality	26.1 Information relating to the examination, evaluation, comparison, and post qualification of Bids and recommendation of Contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process.
	26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.
	26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.
27. Clarification of Bids	27.1 To assist in the examination, evaluation and comparison of the Bids, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing and delivered to concerned bidders through e-Procurement Portal or through e-mail id mentioned in the Bidding Document. The due date and time to response these queries will also be communicated. No change in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of errors discovered by the Employer in the evaluation of the Price Bids, in accordance with ITB 14.2 and ITB 34.1.
	27.2 The Bidder shall respond to the queries on e-Procurement Portal or on the email id mentioned in the Bidding Document. If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's requests for clarification, their bid shall be evaluated as per the available information in the submitted bid and bid may be rejected.
28. Deviations, Reservations, and Omissions	28.1 During the evaluation of Bids, the following definitions apply: (a) "Deviation" is a departure from the requirements specified in the Bidding Document; (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.
29. Examination of Technical Bids	29.1 The Employer shall examine the Technical Bid to confirm that all documents and technical documentation requested in ITB 11.2 have been provided, and to determine the completeness of each document submitted.
	29.2 The Employer shall confirm that the following documents and information have been provided in the Technical Bid. If any

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	of these documents or information is missing, the offer may be rejected. (a) Letter of Technical Bid; (b) written confirmation of authorization to commit the Bidder; (c) Bid Security; (d) Technical Proposal in accordance with ITB 16.
30. Responsiveness of Technical Bid	30.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.
	30.2 A substantially responsive Technical Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that, (a) if accepted, would: (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
	30.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section 6 (Employer's Requirements) have been met without any material deviation, reservation, or omission.
	30.4 If a Bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and shall not subsequently be made responsive by correction of the material deviation, reservation, or omission.
31. Nonmaterial Nonconformities	31.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid that do not constitute a material deviation, reservation, or omission.
	31.2 Provided that a Technical Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
	31.3 Provided that a Technical Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The cost of all quantifiable non material non conformities shall be evaluated by Employer and will make its own assessment of the cost of any nonmaterial nonconformities and omissions for the purpose of comparison of Bids and shall be advised to technically qualified and substantially responsive Bidders before opening of Price Bid.

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32. Qualification of the Bidder	32.1 The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders meet the qualifying criteria specified in Section 3 (Evaluation and Qualification Criteria). The Documents / Information produced/ Furnished by the Bidder shall be subject to verification by the NCRTC at any stage during the Bidding Process or during the Contract Execution. In case of the incorrect certification/ information furnished by Bidder, being noticed during such verification, NCRTC reserves the Right to disqualify or take suitable action. However, the Bidder/Contractor shall not be absolved of the responsibility of submitting the genuine documents and will remain responsible for all the documents submitted even if NCRTC does not verify the Documents. Further, an undertaking in this regard shall also be submitted by the authorised signatory of the bidder in the Bidding Forms- Form UT-6.
	32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1. Unless permitted in the **BDS**, the determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, SPVs, parent entities, affiliates, Subcontractors (other than Specialist Subcontractors if permitted in ITB 33.2 of the Bidding document), Associates, Sister companies, or any other firm(s) different from the Bidder to meet the requirement of EQC in Section 3 unless they are part of Bidding entity.
	32.3 An affirmative determination shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. A negative determination shall result into the disqualification of the Bid, in which event the Employer shall not open Price Bids of such Bidders.
	32.4 The Employer reserves the right to reject the bid of the Bidder found to be bankrupt or insolvent, goes into liquidation, has a receiving or administrative order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.
33. Subcontractors	33.1 Unless otherwise stated in the **BDS**, the Employer does not intend for the contractor to execute any specific elements of the Works through nominated subcontractors. 33.2 If subcontractors are proposed for any of the key activities listed in Section 3 (Evaluation and Qualification) Criteria 2.4.2, they shall be considered as "Specialist Subcontractors" and shall meet qualification requirements for the relevant key activities.
34. Correction of Arithmetical Errors	34.1 During the evaluation of Price Bids, the Employer shall correct arithmetical errors on the following basis: (a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is

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	an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected. (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected. (c) If there is a discrepancy between the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Price Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Price Bid will be corrected. (d) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a), (b) and (c) above.
	34.2 If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors mentioned in ITB 14.2 and ITB 34.1, its Bid shall be disqualified and its bid Security may be forfeited.
35. Conversion to Single Currency	35.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified in ITB 15.4.
36. Preferences & Relaxations	36.1 Preferences & relaxations shall be applicable as specified in the **BDS**.
37. Evaluation and Comparison of Price Bids	37.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
	37.2 I. To evaluate the Price Bid, the Employer shall consider the following: a) the bid Price, excluding provisional sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Daywork items, where priced competitively; b) price adjustment for correction of arithmetic errors in accordance with ITB 34.1; c) price adjustment due to discounts offered in accordance with ITB 14.4; d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 35; e) adjustment for nonmaterial nonconformities in accordance with ITB 31.3; f) assessment whether the bid is abnormally low in accordance with ITB 38; and g) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria). II. The Employer's evaluation of a Bid will exclude and not take into account, a) in the case of Goods/Plants/ Services/Works (as defined under General Conditions of Contract) offered from abroad, the details of taxes and duties, applicable in the Employer's country and payable on the Goods if the

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	Contract is awarded to the Bidder are mentioned in the **BDS**; and b) in the case of Goods/Plants/ Services/Works (as defined under General Conditions of Contract) offered from within the Employer's country, the details of taxes and duties, applicable in the Employer's country and payable on the Goods if the Contract is awarded to the Bidder are mentioned in the **BDS**.
	37.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
	37.4 If this Bidding Document allows Bidders to quote separate prices for different contracts, and the award to a single Bidder of multiple contracts, the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Price Bid, is specified in Section 3 (Evaluation and Qualification Criteria).
	37.5 The Employer shall compare all substantially responsive Bids to determine the lowest evaluated Bid price, in accordance with ITB 37.2.
	37.6 Multiple Lowest Bidders (L-1) In case of a tie between the lowest bidders, the Employer shall invite the parties to submit a revised financial bid (Discounted Offer). The bid will be awarded to the bidder with the lowest revised financial bid, provided the rates remain reasonable and the bidder is technically suitable as per the bid requirements.
38. Abnormally Low bids	38.1 An abnormally low bid is one where the bid price, in combination with other elements of the bid, appears to be so low that it raises concerns as to the capability of the Bidder to perform the contract for the offered bid price. When the offered bid price appears to be abnormally low, the Employer shall undertake a three-step review process as follows: (a) identify abnormally low costs and unit rates by comparing them with the engineer's estimates, other substantially responsive bids, recently awarded similar contracts. In the first instance, reasonability of Bidder's offer is to be checked considering its past experience in the similar works, Bidder's acquaintance with the scope of work and any favorable conditions available to the bidder. (b) in case reasonability of its offer is not established, Employer may seek a written explanation from the Bidder of the reasons for the offered bid price, including a detailed analysis of costs and unit prices, by reference to the scope, proposed methodology, schedule, and allocation of risks and responsibilities. This may also include information regarding the economy of the manufacturing process; the services to be provided, or the construction method to be used; the technical solutions to be adopted; and any exceptionally favorable conditions available to the Bidder for the works, equipment or services proposed. (c) After examining the explanation given and the detailed price analyses presented by the bidder, the Employer may:

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	i) accept the bid, if the evidence provided satisfactorily accounts for the low bid price and costs, in which case the bid is not considered abnormally low; ii) In case the evidence provided does not satisfactorily accounts for the low bid price and cost as required above. In such case the bid shall be rejected and bid security shall not be executed.
39. Unbalanced Bids	39.1 If the Bid, which results in the lowest evaluated Bid Price, is substantially unbalanced in the opinion of the Employer. A bid is considered as substantially unbalanced, where, unit prices quoted for the items / schedules are, say, 50% higher than the average quoted price by other two lowest bidders and engineer's estimate for the same items / schedules, and where the total weightage of the items/schedules exceeds 5 % of the total bid price. The Employer may require the Bidder to produce detailed price analyses for such items/schedules of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed, as well as the pricing and sources of materials, equipment and labor. 39.2 After the evaluation of the information and detailed price analysis presented by the Bidder, the Employer may as appropriate: (a) accept the Bid (b) Reject the Bid
40. Employer's Right to Accept Any Bid, and to Reject Any or All Bids	40.1 The Employer reserves the right to (a) independently verify, disqualify, reject and/ or accept any and all submissions or other information and/ or evidence submitted by or on behalf of any Bidder, (b) suspend and/ or cancel the Bidding Process and/ or amend and/ or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto, (c) consult with any Bidder in order to receive clarification or further information; or (d) retain any information and/ or evidence submitted to the Employer by, on behalf of, and/ or in relation to any Bidder, without assigning any reason and without incurring any liability to Bidders. 40.2 It shall be deemed that by submitting the Bid, the Bidder agrees and releases the Employer, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/ or performance of any obligations hereunder, pursuant hereto and/ or in connection with the Bidding Process and waives, to the fullest extent permitted by applicable laws, any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or in future.
41. Notice of Intention for Award of Contract	Standstill provisions are not applicable.
F. Award of Contract	
42. Award Criteria	42.1 The Employer shall award the Contract to the Bidder whose offer has been determined in line with ITB 37 to ITB 39 above

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	to be the lowest evaluated Bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.
43. Notification of Award	43.1 Prior to the expiration of the period of bid validity, the Employer shall transmit the Notification of Award using the form included in Section 9 (Contract Forms) to the successful Bidder, in writing, that its Bid has been accepted. The equivalent of the respective currencies as submitted by the Bidder in the Price Bid shall also be stated in the Letter of Acceptance. Letter of Acceptance will be issued in two original and identical sets, in favour of the successful Bidder. Any one set may be retained by the successful Bidder and the other set is required to be returned by the successful Bidder, duly signed and stamped stating "Unconditionally accepted" on each page (including the enclosures) by the authorized signatory of the successful Bidder, as a token of unconditional acceptance of the same so as to reach the Employer within seven days of issue of this letter. 43.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.
44. Performance Security	44.1 Within 28 days of the issue of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 38 and ITB 39, using for that purpose the Performance Security Form included in Section 9 (Contract Forms), or another form acceptable to the Employer. **The commencement date shall be date of issue of Letter of Acceptance (LOA) or the date stipulated in LOA whichever is later.**
	44.2 If the successful bidder fails to submit the Performance Security within 28 days after the date of issue of LOA and requests for extension of time (if any) for submission, a penal interest of 15% per annum on Performance Security Amount/Outstanding Performance Security Amount (as the case may be) shall be charged for the delay beyond 28 (Twenty-Eight) days, i.e., from 29th day after the date of issue of LOA to the date of submission of Performance security. If the Contractor fails to submit the requisite Performance Security within 28 days after issue of LOA or extension of time (if any), this shall constitute sufficient grounds for the annulment of the award and forfeiture of Bid security. Further, after submission of performance security, failure of signing of Contract Agreement shall also constitute sufficient grounds for the annulment of the award and forfeiture of Performance Security. In case re-bidding is resorted to, such Bidder(s) shall not be permitted to participate in the re-bidding process.
45. Signing of Contract	45.1 **The Contract Agreement shall be Signed within 60 days after the date** of **issue of the Letter of Acceptance**

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	subject to submission of Performance Security and its bank confirmation.
46. Bidding-Related Complaints	46.1 The Bidder may submit its complaint arising out in Bidding process in writing, to: Title/position: **Executive Director/Procurement** Employer: **National Capital Region Transport Corporation Ltd.** Email address: procurementcell@ncrtc.in
47. Jurisdiction of Courts	47.1 The bidding process shall be governed by and construed in accordance with the laws of India and the Courts with jurisdiction in New Delhi shall have exclusive jurisdiction over all the disputes/issues arising under, pursuant to and/ or in connection with the bidding process.



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Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
1	Part-I, Section-3:EQC	Bidder should propose the light fixtures of the OEM who should have its own NABL with accredited lab certificate.	We strongly discourage the inclusion of such a tender requirement mandating the OEM to have its own in-house NABL-accredited laboratory, as this condition does not provide any meaningful additional assurance to the end client, i.e., NCRTC. The presence of an in-house NABL-accredited laboratory with the OEM does not, by itself, establish or guarantee any product superiority, technical superiority, or quality superiority. Further, testing a manufacturer's own products in its own laboratory may create a potential conflict of interest and does not necessarily provide the level of impartiality and independence expected in quality verification. Therefore, we strongly recommend that this clause be reconsidered and suitably modified. As an alternative, it may be stipulated that all products proposed to be supplied to NCRTC shall be tested and certified by an independent, third-party NABL-accredited laboratory. Such independent testing would ensure unbiased verification of the product's performance and compliance with the specified technical requirements and would significantly reduce the possibility of any compromise or manipulation in the testing process. Accordingly, we request NCRTC to remove the requirement for an OEM's own in-house NABL-accredited laboratory and instead accept valid test reports issued by independent third-party NABL-accredited laboratories.	Refer Appendix -1 of A&C-5
2	Part-I, Section-3:EQC	Bidder should submit the ISO: 9001:2015, ISO:14001:2015, ISO 45001:2018, ISO: 50001 certificates of proposed OEM of Light Fixtures.	ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 is understood as are for management system certifications, relating respectively to Quality Management, Environmental Management and Occupational Health & Safety Management. However, ISO 50001 relates to the internal energy management system of an organization. It does not certify the product quality, pole strength, coating thickness, wind-load suitability, luminaire performance, driver quality, or service life of decorative poles and luminaires. For this project, relevant quality parameters should be BIS, LM79, LM80, type test reports, routine test reports, IP / IK ratings wherever applicable, structural design approval, warranty, and independent testing. Accordingly, ISO 50001 may kindly be deleted from the mandatory requirements, as it does not have a direct nexus with the quality of decorative streetlight poles and luminaires.	Refer Appendix -1 of A&C-5
3	Part-I, IFB	Due Date of Tender: 23-Sep-2026 at 03:00 PM	In view of the above, we kindly request you to provide the necessary clarification on the queries raised and suitably extend the bid submission deadline by at least 10 days from the date of issuance of the clarification. This additional time will enable the bidders to adequately review the clarified requirements, finalize the technical proposal and submit a competitive and best-priced offer in accordance with the tender requirements. We therefore request your kind consideration and approval for the extension of the bid submission due date accordingly.	Refer A&C-4
4	Part-I, Section-3:EQC	Similar Nature Work shall mean: "Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light of Government Building, Commercial building, Railway stations/Metros/RRTS, Airports, Sports stadium, Heritage Building /Ancient monument, Any other similar Façade lighting work of public use project"	We respectfully submit that the Similar Work definition prescribed in the tender appears to be excessively narrow and restrictive, particularly considering the high-value nature of the subject work. Such a narrowly defined scope may substantially restrict wider participation and competition. The proposed façade lighting work is essentially an illumination/lighting work forming part of general electrical works and does not, by itself, require any specialized façade-specific technical expertise from the electrical contractor. Typically, the lighting design, technical specifications, product selection and supply of façade LED lighting systems are undertaken by the respective OEM/specialized LED lighting manufacturer, while installation and associated electrical. Further, we would like to bring to your kind notice that similar façade/illumination works are generally covered under General Electrical Works in various tenders of the Ministry of Railways, and we have several such references wherein façade lighting works have been executed under the broader General Electrical Works category. Considering that NCRTC is also similar to Indian Railways, we request NCRTC to kindly consider the prevailing practice followed in Indian Railway tenders & other government departments & PSU's and suitably broaden the Similar Work definition to include General Electrical Works / Illumination Works / Lighting Works, rather than restricting participation only to contractors having narrowly defined façade-specific experience. We strongly believe that such a revision will improve competition, encourage wider participation of technically competent electrical contractors, and ensure better price discovery, without compromising the technical requirements or quality of execution. We therefore request NCRTC to kindly review and suitably amend the Similar Work definition to facilitate wider and healthy participation in the tender.	Refer EQC-R1 of A&C-5

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Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
5	Part-I, IFB	Due date of tender: 23-Sep-2026 03:00 PM	Accordingly, you are requested to kindly confirm/clarify above queries and extend the due date of the bid submission by at least 10 days from your clarification date, so that we can quote our best prices in line to your requirement.	Refer A&C-4
6	Part-I, Section-3:EQC	Similar Nature of Work – Mono Façade OR RGB Dynamic Façade	The tender requires experience in similar nature of work as "Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light of Government Building, Commercial building, Railway stations /Metros/RRTS, Airports, Sports stadium, Heritage Building/Ancient monument, Any other similar Façade lighting work of public use project" however it is not clear that the façade lighting work shall be mono façade OR RGB Dynamic Façade work. We request you to clarify whether experience in static/mono-colour façade lighting OR RGB/RGBW dynamic façade lighting shall be considered.	Refer EQC-R1 of A&C-5
7	Part-I, Section-3:EQC	Turnover Criteria – Disproportionately High Requirement	The estimated cost of the tendered work is approximately ₹15.62 Crores, whereas the turnover requirement is Minimum Average Annual Construction Turnover of INR 26.75 Crore within the last 05 (five) years. We request you to kindly review the turnover requirement and consider reducing it to a reasonable and proportionate level commensurate with the estimated project value. It is to be noted that as per CPWD/CVC guidelines average annual financial turnover of a bidder during the last three consecutive financial years must be at least 30% of the estimated cost. Also kindly clarify that the turnover requirement is Annual Construction turnover OR total annual turnover since the nature of work is Electrical and not construction. A more proportionate turnover criterion will encourage participation from competent specialist façade lighting contractors while still ensuring adequate financial capacity for successful execution of the project.	Refer EQC-R1 of A&C-5
8	Price Bid BOQ Sl.No. 1A(i) & 1A(ii)	Change in Wattage of Lighting Fixtures as per BOQ	As per discussion in pre bid meeting, the scope of work also includes design in addition to SITC of façade lighting work however the wattage of the Light fixtures as per Item 1A(i) and 1A(ii) has been fixed as 45-50W and 36-45W RGB respectively. Kindly clarify if the change in wattage of fixtures will be permitted in order to achieve the design intent or we have to design considering the same range of wattage of lights only. In case the range of wattage of the light fixture shall remain fixed, it might not be possible to achieve the design conceived by the department since the legitimacy of the design concept is not ascertained with the specific wattages.	Refer Price Bid-R1 of A&C-5
9	Part-I, Section-3:EQC	Requirement of In-House NABL Accredited Laboratory for Lighting Manufacturer	The tender specifies a requirement for the lighting manufacturer/OEM to have its own in-house NABL-accredited laboratory. We request you to kindly reconsider this condition, as requiring an OEM to necessarily own an in-house NABL-accredited laboratory may restrict participation to a limited number of manufacturers, despite other manufacturers having their products duly tested and certified through NABL-accredited independent laboratories. We therefore request that the condition may be amended to permit manufacturers whose products are tested through NABL-accredited laboratories, whether the laboratory is owned by the manufacturer or is an independent accredited testing laboratory. Such an amendment would maintain the required quality and testing standards while ensuring wider participation and healthy competition.	Refer Appendix -1 of A&C-5
10	Part-I, Section-3:EQC	Requirement of ISO 50001 Certification for Lighting Manufacturer	The tender requires the lighting manufacturer/OEM to possess ISO 50001 certification. We request you to kindly review this requirement, as ISO 50001 relates primarily to an organisation's Energy Management System and may not necessarily be a direct indicator of the technical quality, reliability, photometric performance or suitability of a lighting product.	Refer Appendix -1 of A&C-5
11	Part-II, Section-6B:Technical Specification	Section E05, Annexure-2, List of Makes As per Sr. 20, only 5 brand of LED Light fitting are allowed i.e. Philips(Signify), Bajaj, Surya, Wipro, Crompton	Request inclusion of OSRAM/LEDVANCE make in the list of approved makes/manufacturers. As per the tender speci□ication, only five makes have presently been speci□ied. We request the authority to kindly consider OSRAM/LEDVANCE as an additional approved make, as OSRAM/LEDVANCE is a globally reputed manufacturer with established credentials and proven experience in providing quality lighting solutions. OSRAM/LEDVANCE products are widely used in infrastructure, commercial and public projects and can meet the required technical speci□ications, performance parameters, quality standards and warranty requirements specified in the tender. The inclusion of OSRAM/LEDVANCE will provide wider participation and healthy competition among technically quali□ied manufacturers, while ensuring that the required quality and performance standards are fully maintained. will provide wider participation and healthy competition among technically qualified manufacturers, while ensuring that the required quality and performance standards are fully maintained. will provide wider participation and healthy competition among technically qualified manufacturers, while ensuring that the required quality and performance standards are fully maintained. products are widely used in infrastructure, commercial and public projects and can meet the required technical specifications, performance parameters, quality	Follow Bid Conditions

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Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
12	Part-I, Section-3:EQC	Section 3, SBD Evaluation and Qualification Criteria, Cl No 1.9 of Evaluation "Joint Venture Participation: Not Permitted"	Joint Venture/Consortium Participation: Permitted, subject to fulfilment of the prescribed technical, financial, statutory and experience requirements. The JV/Consortium members shall be jointly and severally responsible for satisfactory execution of the Contract." We request the Employer to kindly consider the above amendment in the interest of wider participation, competitive bidding and optimum value to the Employer.	Follow Bid Conditions
13	Part-I, Section-3:EQC	Section 3, SBD Evaluation and Qualification Criteria, Cl No 5 of 2.4.2 of Evaluation "Bidder should propose the light fixtures of the OEM who should have its own NABL with accredited lab certificate"	The above requirement stipulating that the OEM should have its own NABL-accredited laboratory may restrict participation to a limited number of OEMs, although the required product quality and performance can be adequately established through valid test reports issued by any competent NABL-accredited laboratory. The OEM shall submit valid and relevant test reports/certi□icates for the offered light fixtures issued by an NABL-accredited laboratory having the relevant scope of accreditation. The NABL-accredited laboratory need not necessarily be owned by the OEM."	Refer Appendix -1 of A&C-5
14	Part-I, Section-3:EQC	Section 3, SBD Evaluation andQualification Criteria, Cl No 7 of 2.4.2 of Evaluation"Bidder should submit the ISO: 9001:2015, ISO:14001:2015, ISO 45001:2018, ISO: 50001 certificates of proposed OEM of Light Fixtures."	ISO 50001 is an Energy Management System standard primarily intended for establishing, implementing and continually improving an organization's energy management system. The certification relates to the management of energy use and performance within an organization and is not a product-specific certification for LED light fixtures. Bidder shall submit valid ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 certificates of the proposed OEM of Light Fixtures. ISO 50001:2018 shall be optional/preferred and shall not be a mandatory eligibility criterion."	Refer Appendix -1 of A&C-5
15	Part-II, Section-6B:Technical Specification	Section E00, Electrical Work, Cl No 1.1 of Scope of Work "Bidder shall be a licensed Electrical Contractor possessing a valid Contractor's license of appropriate class in the state, employing supervisors and skilled workers having valid permits as per the regulations of Indian Electricity Rules and local Electrical Inspectors requirements"	Bidder shall be a licensed Electrical Contractor possessing a valid Contractor's License of appropriate class in the State and shall employ suitably qualified and competent supervisors and skilled workers as required for execution of the works in accordance with requirements of the Electrical Inspector/competent authority." We request the Employer to kindly consider the above amendment in the interest of wider participation and healthy competition.	Follow Bid condition
16	Part-I, Section-3:EQC	Form FIN 3A of Section-4 (Bidding Forms) "Evidence of Availability of Credit Line Financial Resources"	Kindly amend the clause to permit a Bank Solvency Certificate / Net Worth / acceptable banking reference as an alternative to mandatory OD/CC/fund-based credit facility.	Follow Bid Conditions
17	Part-II, Section-6B:Technical Specification	List of makes: LED Light fittings	We request you to Include Canara Brand under LED light fittings	Follow Bid Conditions
18	Part-I, Section-3:EQC	Joint Venture	We request you allow Joint Venture	Follow Bid Conditions
19	Part-I, Section-3:EQC	OEM who should have its own NABL with accredited lab certificate	Request tom relax the clause & accept 3rd Party NABL Certificates.	Refer Appendix -1 of A&C-5
20	Annexure-2 LIST OF MAKES S.N.20 LED Light fittings	Philips(Signify), Bajaj, Surya, Wipro, Crompton	We kindly request you to consider and include Leksa Lighting in Annexure-2 – List of Makes, S. No. 20: LED Light Fittings, as an approved make for the proposed works.	Follow Bid Conditions
21	Part-I, Section-3: EQC 2.4 Construction Experience 2.4.1 Contracts of Similar Size and Nature:	A. Participation as a contractor or JV partner in One Single Contract/ work, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 10.70 Crore in the similar nature work mentioned below. OR B. Participation as a contractor or JV partner in Two Single Contracts/ works, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 6.69 Crore in each Contract in the similar nature work mentioned below. OR C. Participation in Three Single Contracts/ works as a contractor or JV partner, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 5.35 Crore in each Contract in the similar nature work mentioned below. FOR STARTUP FIRMS: A. Participation as a contractor or JV partner in One Single Contract/work, within the last seven years ending last day of the month previous to the month of deadline for bid submission, that has been successfully or substantially completed where the total value of the Bidder's participation is not less than INR 8.03 Crore in the similar nature work mentioned below.	Request you to kindly clarify whether private works are considered under the similar work experience. Also, please clarify whether sub-let works are considered under the similar work experience	Follow Bid Conditions
22	Part-II, Section-6B:Technical Specification	Inclusion of Make "Instapower"	This is with reference to the pre-bid meeting wherein the NCRTC representative assured that our make "Instapower" would be considered. In this regard, we had already sent an email on 14th August 2026 to the email ID: ggm.enm.elev@ncrtc.in.	Follow Bid Conditions
23	Part-I, Section-3:EQC	Value enhancement	We further observe that a value-enhancement clause is not mentioned in the tender documents. We kindly request you to consider this point regarding value enhancement.	Follow Bid Conditions
24	Part-I, Section-3:EQC	Allow participation through Joint-Venture	In view of the above, we request you to please allow participation through Joint Venture for the said tender.	Follow Bid Conditions

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Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
25	Part-II, Section-6B:Technical Specification	Annexure-2 - LIST OF MAKES - 20 - LED Light fittings	Incorporate our Make "ORIENT ELECTRIC"	Follow Bid Conditions
26	Annexure 2 List of Makes Po	List of Approved Make	Jaquar fully satisfies the eligibility criteria prescribed for Original Equipment Manufacturers (OEMs) under the tender. However, despite meeting the stipulated qualification requirements, our brand has not been included in the list of approved/preferred makes. We have successfully completed and handed over the Janki Setu Media Façade Lighting Project, Rishikesh, executed for PWD Uttarakhand, wherein approximately 28,000 DOT Pixel luminaires were installed to transform a 346-meter suspension bridge into a dynamic media façade display.	Follow Bid Conditions
27	Part-I,IFB	Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC	We request you to please share the design as the TENDER DOCUMENTS only has the Elevation & Section Drawings in PDF	Follow Bid Conditions
28	Price Bid BOQ Sl.No. 1A	Design, Supplying Installation, Testing and Commissioning of LED RGB/RGBWW/RGBNW/ RGBA/ RGBW (as per site requirement) Linear Profile / Wall Washer/ Projector light/ Spot Light luminaire for Facade lighting with aluminium extruded/ Die Cast housing with driver (the Cost of the required driver(s) shall be included in this line item) of following wattage as given below. The luminaire bracket (If required) shall be made of cold-rolled steel & shall be so designed that the luminaire can be tilted up to ±90°, having the rotation degrees scale shall be provided. The luminaire shall be IP66 protection also having silicon gasket between optical cover & LED chamber to ensure proper IP66 protection. CRI>80, SDCM85%, EMI/EMC as per CISPR-15(the parameter to be complied shall be as per the requirement and will be finalized during the design stage). There should be options of beam angles of 10/20/30/40/60(exact degree shall be finalized as per site requirement during design stage) asymmetric degree. Luminaire should have efficacy of minimum 40 lm/W for RGB/ RGBNW/ RGBWW/TNW and 65 lm/W for mono colour options. Luminaire shall be capable of producing dynamic colour changing light for with 16 million colours by DMX/Ethernet based control. The beam angle of the fitting shall be narrow, medium, wide or asymmetric as per the requirement. Luminaire shall be complete with replaceable driver and capable of operating at line voltage without any separate power supply from 100-270 V AC, 50 Hz with power factor > 0.9. Fixture shall be suitable to operate at an ambient temperature range of -10°C to +50°C and shall have impact resistance of IK 07. Lifetime of complete luminaire (LED ,Driver , Electrical & control circuitry) shall be at least L70:50000 burning hours at 50°C. Luminaire shall be conforming to BIS (IS 10322) with dully R Number marked and shall be complete with all necessary accessories required for proper working of fixture including connection/inter connection with weather proof ISI Marked copper conductor of minimum size 1.5sqmm connection cables and accessories , prewired Integral male/female water proof connectors of min IP-67. The successful bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79 report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer, Rohs Compliance, along with CE/ BIS certificate for following type of lights [Application: For Piers/Columns, Steel Portal/ Longitudinal Louvers] The contractor shall install the sample/mock-up at site during the design stage for review and approval by Employer (NCRTC)	We request you to kindly accept IK06 Rating for Linear Profile/Wall Washer and as IK07 for Flood Washer/Spot Light shall be IK07	Follow Bid Conditions
29	Price Bid BOQ SL.No. 1B	Pixel dot LED light : for longitudinal façade towards ring road side and Nizamuddin Railway station side on the gap between the existing louvres (the gap is around 2 meter) or at any location at station, create uniformity effect. The contractor shall install the sample (mock-up) at site during the design stage for review and approval by Employer (NCRTC). Dot pixel LED shall have meet following requirements as a minimum:- Design,Supply, Installation & commissioning of intelligent direct-view LED media façade complete with all luminaires, mounting accessories/Supporting Structure in the gap inter connection cables, connectors, power supplies/SMPS/ Drivers, Control equipment, software, and ancillary components required for operation of system. The luminaire shall consist of compact direct-view LED nodes arranged in maximum 50mm pitch (center-to-center) pixel spacing, utilizing high-efficiency low-power LEDs available in RGBW. Each node shall be housed in a fire retardant polycarbonate (PC) enclosure with anti-aging, UV resistant optical covers. The fixture shall be suitable for track-mounted or surfacemounted installation, with a minimum protection rating of IP-66/IP-67 and IK-06. The luminaire shall provide a minimum output of 36 lumens per node for RGBW versions and upto 85 lumens per node for white versions, depending on optical configuration, with a rated life time of not less than 50,000 hours (L70 B50 at 35°C). The system shall support DMX 512 control with individual pixel control, smooth digital dimming, dynamic color changing capabilities, and integration in to intelligent façade lighting systems. Pre-wired Male and female connectors (with IP-67 rating) shall be provided for through-wiring of power and data. The luminaire shall be suitable for operation in ambient temperatures ranging from -10°C to +55°C. The manufacturer shall provide complete technical documentation, photometric data, wiring diagrams, installation instructions, and compliance certificates, and the product shall be certified to CE/BIS requirements or equivalent international standards	We request you to kindly specify the Wattage of DOT Pixel	Follow Bid Conditions
30	Price Bid	**Mock-up Approva**l The BOQ specifies that the contractor shall install a sample/mock-up at site during the design stage for approval by NCRTC.	Kindly clarify the mock-up approval methodology, acceptance criteria, and timeline for approval.	Refer Price Bid-R1 of A&C-5
31		**Dynamic Lighting Requirements** The BOQ specifies DMX/Ethernet-based control and dynamic colour-changing capability but does not define the scene requirements.	please confirm the number Of preset scenes required to be programmed and handed over under the project scope.	Follow Bid Conditions
32		**Stencil / GOBO projection Requiremen**t The BOQ specifies 200W image projectors with four stencils; however, projection content requirements have not been defined	Kindly confirm whether logo projection, station branding, NCRTC branding, event projection, or festival projection is envisaged	Follow Bid Conditions
33		**Pole Supply Scope** The BOQ mentions consideration Of poles up to 7 metres for GOBO projectors but does not provide detailed pole specifications.	please provide pole technical specifications, material, foundation requirement, Surface finish, and mounting arrangement.	Refer A&C-5
34		**Existing Cable Tray Availability** The BOQ allows usage of existing cable trays wherever available subject to NCRTC approval.	Kindly provide details and routing drawings of available cable trays intended for facade lighting installation. please confirm the extent Of additional cable trays, raceways, support structures, and mounting accessories required under the contractor's scope	Follow Bid Conditions

NATIONAL CAPITAL REGION TRANSPORT CORPORATION LIMITED
(A Joint Venture Govt. of India and participating State Govts.)
Gatishakti Bhawan, INA New Delhi – 110023

Name of Work: Bid No.: DM/EL/COR-OF/317: "Design, Supply, Installation, Testing, Commissioning and Integrated test of Façade lighting work along-with 2 years DLP and further 3 years AMC beyond 2 years DLP at Sarai Kale Khan Namo Bharat Station of Delhi-Ghaziabad - Meerut Namo Bharat Corridor of NCRTC

Pre-Bid Queries and Reply

S.No.	Bidding Document Part/Section/Clauses No.	Description of item	Queries	Reply
35		**Pixel Dot LED Technical Specifications** The BOQ specifies a maximum 50 mm pitch with DMX control, but some key technical parameters remain undefined	• Kindly confirm the wattage per pixel node. • BOQ specifies pixel dot lighting quantities in Square Meter (Sq.m.) basis, pixel-dot application areas along with intended visual outcome. • Kindly clarify whether the pixel-dot lighting system is intended to function as a Media Facade capable of displaying text, animations, logos, videos and event Content, or only dynamic decorative lighting effects	Follow Bid Conditions
36		Ambient Temperature of Controller	As the facade lighting controllers are proposed, kindly confirm acceptance of controller operating temperature range of OOC to +450C. Request NCRTC to confirm that this shall be acceptable.	Follow Bid Conditions
37	Part-I, IFB	Design, Supply, Installation, Testing & Commissioning and maintenance of Façade light of Government Building, Commercial building, Railway stations/Metros/RRTS, Airports, Sports stadium, Heritage Building/Ancient monument, or any other similar public use project.	You are requested to kindly provide the approval of "Design, Supply, Installation, Testing & Commissioning and maintenance of **Façade/ Flood lighting** of Government Building, Commercial building, Railway stations/Metros/RRTS, Airports, Sports stadium, Heritage Building/Ancient monument, or any other similar public use project.	Refer EQC-R1 of A&C-5
38	Annexure 2: List of makes. Sr. no. 7	MCB Distribution Boards: &T Hager, MDS, Siemens, ABB, Havells, GE, Tricolite, Schneider, Neptune, Adlec,	MCB Distribution Boards: &T Hager, MDS, Siemens, ABB, Havells, GE, Tricolite, Schneider, Neptune, Adlec or any CPRI approved make manufacturer.	Follow Bid Conditions
39	Price Bid BOQ Sr. No. 1B & 3	Pixel dot LED light details & Controller	At 50 mm pitch, 678 sqm; appx. 271,200 pixel dots shall be required. Thus, appx. 2100 DMX universes shall be required to control individual pixel dot. However, only 4 nos. of controllers with 16 nos. of universes each, are mentioned in Sr. no. 3 which are insufficient to control individual pixel dots. Please clarify the control architecture expected, for pixel dots, 40W & 50 W RGBW luminiares (Sr. no.1).	Follow Bid Conditions
40	Price Bid BOQ Sr. No. 4.1 & 4.2	8 nos. each of splitters having 8 outgoings & 6 outgoings have been mentioned.	As mentioned in sr. no. 4.1 maximum 20-25 fixture per output channel have been considered. Thus, w.r.t luminaire quantities, the quantity of splitters is insufficient for given application to achecive desired lighting effects. Kindly confirm the distinct application & location of each.	Follow Bid Conditions
41	Price Bid BOQ Sr. No. 4.2	RDM-6 Wall Splitter has been mentioned.	However, luminaires mentioned are not RDM enabled. Please confirm the splitter shall be standard DMX spiltter as per splitter details mentioned sr. no. 4.1.	Follow Bid Conditions
42	Price Bid BOQ Sr. No. 13	Incomer rating of Lighting Distribution board mentioned is 63 Amps.	However, w.r.t. number of luminaires & their wattage mentioned in sr. no. 1A (i), 1A (ii) & 1B, the load is quite high. The incomer of 63Amps., of lighting distribution board mentioned, shall not be sufficient to cater given load. Please clarify.	Follow Bid Conditions
43	General points	–	1) Please share simulation & show themes of façade to be covered.	Follow Bid Conditions
44			2) Please share location & rating of power source that will be available.	Follow Bid Conditions
45			3) Please confirm, that drilling, cutting, welding, etc., as required during execution, will be permitted to bidder, in event of order.	Follow Bid Conditions
46	Price Bid	–	1.Please allow variation of wattages and beam angle to +1-20% for better design intent.	Follow Bid Conditions
47			2. Please allow similar nature of job as DMX Of Flood Lighting, DMX is also required for making different themes and synchronization of them.	Follow Bid Conditions