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Jaipur Development Authority, Jaipur

Engineering Procurement and Construction (EPC)

Bid Document

For

Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur

Bidding Document

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VOLUME – I

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Section II - Bid Data Sheet (BDS)
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Section V C - Contract Forms (COF)
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DISCLAIMER

The participating bidders are informed through sale of Bidding Documents and under disclaimer of bid documents, Volume-I as under:-

(a) The interested bidder should make its own independent assessment and seek its own professional, technical, financial and legal advice.

(b) The information provided in the bid documents has been prepared in good faith; it is not and does not purport to be comprehensive or to have been independently verified. Neither JDA, nor any of its officers or employees, not any of their advisers nor consultants accept any liability or responsibility for the accuracy, reasonableness or completeness of, or for any errors, omissions or misstatements, negligent or otherwise, relating of the proposed interior work, or makes any representation or warranty, express or implied, with respect to any written or oral information made or to be made available of any of the recipients or their professional advisers and, so far as permitted by law and except in the case of fraudulent misrepresentation by the party concerned, and liability therefore is hereby expressly disclaimed.

(c) The information contained in the bid documents is selective and is subject to updating, expansion, revision and amendment that a recipient may require. Neither JDA nor any of its officers, employees, nor any of its advisors nor consultant undertakes to provide any recipient with access to any additional information or to update the information in bid documents or to correct any inaccuracies therein which may become apparent. Each recipient must conduct its own analysis of the information contained in bid documents or to correct any inaccuracies therein which may become apparent. Each recipient must conduct its own analysis of the information contained in bid documents or to correct any inaccuracies therein that may contain in bid documents and is advised to carry its own investigation into the proposed interior work, the legislative and regulatory regime which applies thereto and by and all matters pertinent to the proposed Project and to seek its own professional advice on the legal, financial, regulatory and taxation, consequences of entering into any agreement or arrangement relating to the proposed interior work.

(d) The bid documents includes certain statements, estimates, targets and forecast with respect to the interior work. Such statements, estimates, projections, targets and forecasts reflect various assumptions made by the management, officers and employees of JDA, which assumptions (and the base formation on which they are made) may or may not prove to be correct. No representation or warranty is given as the reasonableness of forecasts or the assumptions on which they may be based and nothing in bid documents is, or should be relief on as, a promise, representation or warranty. The estimate provided with the bid document is only for reference purpose. Actual assessment of cost for the work shall be carried out by participating bidder before online submission of bid.

जयपुरविकासप्राधिकरण, जयपुर

कमरानं. 143, प्रथम तल, नागरिक सेवा केन्द्र, रामकिशोर व्यास भवन, इन्दिरा सर्किल जवाहर लाल नेहरू मार्ग, जयपुर–302004

दूरभाष : + 91-141-2569696, ई–मेल : sapanmishra.jda@rajasthan.gov.in

क्रमांकः जविप्रा/अधि.अभि.(मुख्यालय)/2022–23/डी–181 दिनांकः 19.07.2022

निविदा सूचना

निविदा सूचनाः जविप्रा/अधि. अभि.(मुख्यालय)/11/2022–23

जयपुर विकास प्राधिकरण द्वारा **Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur** "जिसकी अनुमानित लागत राशि रू 18.14 करोड़ के लिए ऑनलाईन बिड्स दिनांक 22.07.2022 को सायं 6:00 बजे से आमन्त्रित की जाती है। निविदा बोली का ऑनलाईन आवेदन व भुगतान जविप्रा पोर्टल पर करने की अन्तिम तिथि. 10.08.2022 को सायं 6:00 बजे तक है। निविदा बोली के दस्तावेजों का विस्तृत विवरण www.sppp.rajasthan.gov.in, www.eproc.rajasthan.gov.in and www.jda.urban.rajasthan.gov.inपर देखा जा सकता है।
(NIB Code JDA2223A0229)

निविदा में भाग लेने वालो को निम्न शर्तो की पूर्ति करनी होगी।

1. निविदादाता जयपुर विकास प्राधिकरण की वेबसाईट www.jda.urban.rajasthan.gov.in पर पंजीकृत हो एवं निविदा में भाग लेने के लिए बोलीदाता को आवेदन करने के लिए दस्तावेज शुल्क, अमानत राशि, आर.आई.एस. एल. प्रोसेसिंग शुल्क ऑनलाईन जमा करनी होगी।
2. ऑनलाईन निविदा प्रस्तुत करने के लिए निविदादाताओं का राजस्थान सरकार के ई–प्रोक्यूरमेंट पोर्टल www.eproc.rajasthan.gov.in पर पंजिकृत हो।

अधिशाषीअभियन्ता (मुख्यालय)
जविप्रा, जयपुर।

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR

Room No. MB-FF-143, Ram Kishore Vyas Bhavan, Indira Circle, Jawaharlal Nehru Marg, Jaipur – 302004
Telephone: +91-141-2569696 Email:- : sapanmishra.jda@rajasthan.gov.in

No: - JDA/EE(HQ)/2021-22/D-181 **Dated: 19.07.2022**

NOTICE INVITING BID

NIB No. : JDA/EE (HQ)/11/2022-23

Online Bids are invited from 6.00 PM 22-07-2022 for **"Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur.** Estimated cost is Rs 18.14 Crore. The last date for Applying Bid and making online payment on JDA portal is up-to time 6.00 PM of 10-08-2022 .Details may be seen in the Bidding Document at our office or the State Public Procurement Portal website www.sppp.rajasthan.gov.in, www.eproc.rajasthan.gov.in and www.jda.urban.rajasthan.gov.in.

(NIB Code JDA2223A0229)

To participate in the bid, bidder has to be:

1. Registered on JDA website www.jda.urban.rajasthan.gov.in,for participating in the Bid, the Bidder has to apply for the Bid and pay the Bidding Document Fee, RISL Processing Fee and Bid Security Deposit, online only.
2. Registered on e-Procurement Portal of Government of Rajasthan www.eproc.rajasthan.gov.in for online e-Bid submission.

Executive Engineer (HQ)
JDA, Jaipur

Copy to :-

1. PRO Cell, JDA, Jaipur through TA to DE (II) for publication in News paper.

Executive Engineer (HQ)
JDA, Jaipur

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR

Room No. MB-FF-143, Ram Kishore Vyas Bhavan, Indira Circle, Jawaharlal Nehru Marg, Jaipur – 302004
Telephone: +91-141-2569696 Email:- :sapanmishra.jda@rajasthan.gov.in

No: - JDA/EE-HQ/2022-23/D-181 **Dated: 19.07.2022**

NIB No. : JDA/EE-HQ/11/2022-23

Name & Address of the Procuring Entity	➢ Name :Executive Engineer (HQ), Jaipur Development Authority ➢ Address : Room No. 143, 1st floor, Main Building, JDA Campus, Indira Circle, JawaharLal Nehru Marg, Jaipur-302004 (Rajasthan) ➢ Email : sapanmishra.jda@rajasthan.gov.in
Subject Matter of Procurement	**Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur.** Job No. JDA/EE HQ/A & F/2021-2022/Sep/168 Date : 01/09/2021
Bid Procedure	➢ EPC Mode, Tow Bid Stage System (Two Envelope System); open competitive bidding as per e-Bid procedure at http ://eproc.rajastha.gov.in
Bid evaluation Criteria (Selection Method)	➢ L1 (eg. Least Cost based Selection (LCBS)-L1)
Websites for downloading Bidding Document, Corrigendum's, Addendums, etc.	➢Websites: www.sppp.rajasthan.gov.in,www.eproc.rajasthan. gov.in, www.jda.urban.rajasthan.gov.in
Website for online Bid application participation and payment *	➢Website: www.jda.urban.rajasthan.gov.in ➢For participating in the Bid, the Bidder has to apply for this Bid and pay the Bidding Document Fee, RISL Processing Fee and Bid Security Deposit, ➢online only. o Bidding document fee: Rs. 1000/- Rupees (One Thousand Only) o RISL Processing Fee: Rs. 1000/- (Rupees One Thousand Only) ➢Online/Bank Guarantee o Bid Security Deposit (BSD) as detailed below.
Estimated Procurement Cost	INR 18.14 Cr (Eighteen crore fourteen lakhs rupees only)
Bid Security	➢ EMD shall be @2% of estimated procurement cost i.e. Rs. 36.28 Lakhs for the bidder registered in appropriate equivalent class in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act or 0.5% of estimated procurement cost i.e. Rs. 9.07 Lakhs for the bidder registered as contractor for AA class in JDA.

<table>
<tr><td></td><td>
➢ In case of JV please see table below.
<table>
<tr><td>EMD 0.5% shall be applicable for</td><td>1. If both firm in JV are registered in AA class in JDA.</td></tr>
<tr><td>EMD 2.0% shall be applicable for</td><td>In the rest condition in JV, EMD shall be applicable 2.0% of estimated procurement cost i.e.
a) If one bidder registered in AA Class category in JDA, and other registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act.
b) If both bidder are registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act.</td></tr>
</table>
➢ Bid Security deposit can be deposited either online or in the form of Bank Guarantee in favour of Secretary, JDA, Jaipur payable at Jaipur. The bidder will provide details of BG viz No., issue date, expiring date etc on online tendering system of JDA.
➢ A copy of this BG is to be attached with the document during uploading.
</td></tr>
<tr><td>Date/Time/Place of Pre-Bid</td><td>➢ 28-07-2022 at 3.00 PM in "Manthan", Second Floor, Main Building, Ram Kishore Vyas Bhavan, Indira Circle, Jawahar Lal Nehru Marg, JDA Campus, Jaipur</td></tr>
<tr><td>Applying Bid and making Online Payment on JDA portal (www.jda.urban.rajasthan.gov.in)</td><td>➢ Start Date: 22-07-2022 at 6.00 PM
➢ End Date : 10-08-2022 at 6.00 PM
➢ In case EMD in form BG, Original Bank Guarantee is to be submitted in Room No NB-III, 215E of DD (E&B), Jaipur Development Authority by 23-07-2022 at 10.00 AM to 12-08-2022 .up to 6.00 PM</td></tr>
<tr><td>Bid Submission on e-Procurement Portal of GOR (www.eproc.rajasthan.gov.in)</td><td>➢ Start Date: : 22-07-2022 at 6.00 PM
➢ End Date : 10-08-2022 at 6.00 PM</td></tr>
<tr><td>Date/Time/Place of Technical Bid Opening</td><td>• 16-08-2022 at 12.00 Noon in Room No JB-SF-208 2nd floor, court Building, JDA Campus, Indira Circle, JawaharLal Nehru Marg, Jaipur- 302004 (Rajasthan)</td></tr>
<tr><td>Date/Time/Place of Financial Bid Opening</td><td>Will be intimated later to the technically qualified bidders on E-proc portal.
Room No. JB-SF-208, 2nd floor, Court Building, JDA Campus, Indira Circle, JawaharLal Nehru Marg, Jaipur- 302004 (Rajasthan)</td></tr>
<tr><td>Bid Validity</td><td>➢ 120 days from the bid submission deadline</td></tr>
<tr><td>Completion period of work</td><td>➢ 5 Months</td></tr>
<tr><td>Job No</td><td>➢ JDA/EE-HQ/A & F/2021-2022/Sep/168 date:01.09.2021

Amount: 54.60 crores</td></tr>
</table>

A. The details of the project is as below:

- The finishing and interior works including masonry , False Ceiling, wall panelling, Acoustic Work, Flooring Work, Mechanical and Electrical work (Fire Fighting, HVAC, forced ventilation etc) of museum building with one basement floor, two ground floors (lower ground and upper ground) and first floor at Mahatma Gandhi Museum at Central Park, Jaipur on EPC mode.

A. *Process for Tender Participation & Depositing Payment on 'Online Tender Participation' Portal of JDA

1. Participate in tender

a) Bidder can access 'Online Tender Participation' Portal of JDA at https://jda.urban.rajasthan.gov.in/jda or by Single-Sign-On at http://service.jaipurjda.org.

b) Create user Login with a valid mobile number to register yourself for various Online Services of JDA.

c) Select 'Proceed as Citizen' and then 'Proceed for Subscription' for 'Tender Online Payment'. The prevailing plan for getting registered for tendering process of JDA is Rs. 500.00 with the validity period of 3 Years (renewable).

d) After successful payment, re-login and upload required documents for KYC (Know Your Client) compliance as per the type of entity viz. Individuals/ Company/ Partnership Firms/ Trusts & foundations. Besides, Bank Passbook / Cancelled Cheque consisting of Bank Account, IFSC Code is mandatory to be uploaded, to refund the bid security of unsuccessful bidder.

e) After receiving the payment successfully and approving KYC documents the bidder will be authenticated by JDA for taking part in Tender.

2. Deposit Tender Fee, RISL processing fee and Bid Security (EMD)

- Option-1: Payment Gateway (Aggregator)
  The facility to make payment through Debit Card, Credit Card, Net banking etc., will be available. User can use this facility from anywhere any time till the closing date & time of bid participation.
- Option-2: Electronic Fund Transfer (EFT: NEFT/RTGS)
  If the bidder selects payment mode as EFT (NEFT/RTGS), "Paying Slip for EFT (NEFT/RTGS)" will be generated by the system for the complete amount. The payment can be made from any Bank any Branch using this Paying Slip through NEFT/RTGS (Claim against payment made through EFT in any other JDA bank account will not be acceptable and bidder stands disqualified from participation in the bid applied for). After successful transaction through NEFT/RTGS, as per the standard procedures it may take 4 to 24 hours in process of confirmation of EFT through Auto-Process depending on the time of EFT done. Therefore, option to make payment through EFT (NEFT/RTGS) will be available till 48 hours prior to closing date of bid participation.

3. Deposit Bid Security (EMD)

The Bid Security (EMD) can be submitted through Bank Guarantee (BG). Bidder may opt Bank Guarantee (BG) against Bid Security (EMD), for which bidder requires to prepare BG before applying in the tender. The detail of BG requires to be fed on 'Online Tender Participation' Portal of JDA before paying balance amount (Tender Fee + RISL Processing Fee). This balance amount will be paid through Payment Gateway only, option to make balance payment through EFT (RTGS/NEFT) will not be available.

4. Obtain Bid Participation Receipt

After confirming payment, the bidder will get Bid Participation Receipt based on which user will get the payment details along with other details for bidding on e-Procurement portal of GOR.

- In case of BG as the remaining payment will be done through Payment Gateway, on successful transaction the 'Bid Participation Receipt' will be generated on real time basis.
- In case complete payment is done through Payment Gateway, on successful transaction the 'Bid Participation Receipt' will be generated on real time basis.
- In case complete payment is done through EFT (NEFT/RTGS), on confirmation of payment from ICICI Bank (Auto Process) 'Bid Participation Receipt' will be available on Login of Bidder on

JDA portal.

B. **Bid Submission on 'e-Procurement Portal' of Government of Rajasthan

1. Online e-Bid can be submitted after registration at e-Procurement Portal of Government of Rajasthan www.eproc.rajasthan.gov.in
2. It is mandatory to upload Bid Participation Receipt with the bid submission.
3. Details of online payment available on Tender Participation Portal of JDA have to be filled in 'offline payment' section of e-Procurement portal.

Note:

1. Bidder (authorised signatory) shall submit their offer on-line in electronic formats both for technical and financial proposal.
2. In case, any of the bidders fails to pay the Tender Fee, BSD, and RISL Processing Fee, online (subject to confirmation), its Bid shall not be accepted.
3. To participate in online bidding process, Bidders must procure a Digital Signature Certificate (Type III) as per Information Technology Act-2000 using which they can digitally sign their electronic bids. Bidders can procure the same from any CCA approved certifying agency, i.e., TCS, Safecrypt, nCode etc. Bidders who already have a valid Digital Signature Certificate (DSC) need not procure a new DSC. Also, bidders must register on http://eproc.rajasthan.gov.in (bidders already registered on http://eproc.rajasthan.gov.in before 30-09-2011 must register again).
4. JDA will not be responsible for delay in online submission due to any reason. For this, bidders are requested to upload the complete bid well advance in time so as to avoid 11th hour issues like slow speed; choking of web site due to heavy load or any other unforeseen problems.
5. Bidders are also advised to refer "Bidders Manual Kit" available at eProc website for further details about the e-Tendering process.
6. Training for the bidders on the usage of e-Tendering System (eProcurement) is also being arranged by DoIT&C, GoR on a regular basis. Bidders interested in training may contact e-Procurement Cell, DoIT&C for booking the training slot.
   Contact No: 0141-4022688 (Help desk 10 am to 6 pm on all working days) e-mail: eproc@rajasthan.gov.in
   Address: e-Procurement Cell, JDA, Yojana Bhawan, Tilak Marg, C-Scheme, Jaipur
7. The procuring entity reserves the complete right to cancel the bid process and reject any or all of the Bids.
8. No contractual obligation whatsoever shall arise from the bidding document/ bidding process unless and until a formal contract is signed and executed between the procuring entity and the successful bidder.
9. Procurement entity disclaims any factual/ or other errors in the bidding document (the onus is purely on the individual bidders to verify such information) and the information provided therein are intended only to help the bidders to prepare a logical bid-proposal.
10. The provisions of RTPPA Act 2012 and Rules thereto shall be applicable for this procurement. Furthermore, in case of any inconsistency in any of the provisions of this bidding document with the RTPP Act 2012 and Rules thereto, the later shall prevail..

Executive Engineer HQ
JDA, Jaipur

Annexure: 3

As part of NIB Document

Process for Participation & Depositing Payment Online

JAIPUR DEVELOPMENT AUTHORITY, has decided to receive Bidding document fee, RISL Processing Fee and Bid Security Deposit (BSD) through online mode only for which the bidder has to get registered himself on JDA portal www.jaipurjda.org.

To participate in the bid, bidder has to be:

1. Bidder should be registered in AA class category in JDA or equivalent in other departments /PSUs/private or may be a private entity registered under companies act or other relevant acts as applicable.
2. Registered on e-Procurement Portal of Government of Rajasthan www.eproc.rajasthan.gov.in for online e-Bid submission.

Methods for depositing on line amount

- All the eligible bidders should submit earnest money deposit (EMD) (Bid Security), Tender fee and RISL processing fee online through JDA portal. The bid security options available in tender for participants has been mentioned above.

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR

SCHEDULE AND SPECIFICATIONS

Name of Work: Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur

<table>
<tr><td>1.</td><td>NIB No.</td><td>:</td><td>EE (HQ)/11/2022-23</td></tr>
<tr><td>2.</td><td>Approximate cost</td><td>:</td><td>₹ 18.14 Crore</td></tr>
<tr><td>3.</td><td>Cost of the Bid document</td><td>:</td><td>₹ 1000.00, (One Through Online Payment only)</td></tr>
<tr><td>4.</td><td>Bid Processing Fees</td><td>:</td><td>₹ 1000.00 (One Through On Line Payment only)</td></tr>
<tr><td>5.</td><td>Bid Security / Bid Declaration (In favors of Secretary, JDA, Jaipur.)</td><td>:</td><td>➢ EMD shall be @2% of estimated procurement cost i.e. Rs. 36.28 Lakhs for the bidder registered in appropriate equivalent class in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act or 0.5% of estimated procurement cost i.e. Rs. 9.07 Lakhs for the bidder registered as contractor for AA class in JDA.
➢ It can be easily understand with this table
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<tr><td>EMD 0.5% shall be applicable for</td><td>1. If both firm in JV are registered in AA class in JDA.</td></tr>
<tr><td>EMD 2.0% shall be applicable for</td><td>In the rest condition in JV, EMD shall be applicable 2.0% of estimated procurement cost i.e.
a) If one bidder registered in AA Class category in JDA, and other registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act.
b) If both bidder are registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act.</td></tr>
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➢ Bid Security deposit can be deposited either online or in the form of Bank Guarantee in favour of Secretary, JDA, Jaipur payable at Jaipur. The bidder will provide details of BG viz No., issue date, expiring date etc on online tendering system of JDA.
➢ The original BG will be physically handed over in JDA as detailed below.
➢ A copy of this BG is to be attached with the document during uploading.</td></tr>
<tr><td>6.</td><td>Download of Bid document</td><td>:</td><td>From 22-07-2022,6.00PM to 10-08-2022 upto 6:00</td></tr>
</table>

			PM
7.	Upload the Bid Document	:	From. 22-07-2022, 6.00PM to 10-08-2022 upto 6:00 PM
8.	Date of Pre Bid Meeting	:	.28-07-2022, 3.00 PM
9.	Date/Time/Place of Technical Bid Opening	:	• 16-08-2022. at 12.00 Noon in Room No JB-SF-208, 2nd floor, court Building, JDA Campus, Indira Circle, Jawahar Lal Nehru Marg, Jaipur-302004 (Rajasthan)
10.	Date/Time/Place of Financial Bid Opening		Will be intimated later to the technically qualified bidders on E-proc portal. Room No. JB-SF-208, 2nd floor, Court Building, JDA Campus, Indira Circle, Jawahar Lal Nehru Marg, Jaipur- 302004 (Rajasthan)
11.	Physically BG submission start date	:	23-07-2022. at 10:00 AM
12.	Physically BG submission end date	:	12-08-2022 at 6.00 PM
13.	Last Date of submission of Bid cost, Bid Process cost & Bid Security.	:	10-08-2022 up to 6.00 PM through online only.
14.	Completion period of work	:	5 Months

SCHEDULE – A: INFORMATION USEFUL FOR THE BIDDERS:

The bidder should see the site and fully understand the conditions of the site before tendering and include all leads, lift etc. The bidder should also go through the detailed drawings, specifications of each item of Schedule G &Schedule H as this work is on EPC mode and quote his rate on lump-sump basis. The work shall be carried out in accordance with theIndian standard specification/BIS specification and to the entire satisfaction of the Engineer–In–Charge of the work.

Qualified personnel as required under the contractor enlistment rules duly approved by the Deptt. shall have to be engaged at site by the Contractor. The deptt. Reserves the right to engage such staff and recover the expenses from the contractor on such account in case of his failure to do so.

SCHEDULE – B: LIST OF THE DRAWING:

1. Planning Drawings of interior works.

The other drawings may be seen in office of the undersigned.

SCHEDULE – C: LIST OF THE DRAWING TO BE SUPPLIED BY THE BIDDER:

The qualified bidder has to work as per the drawings and specifications provided by the consultant appointed for the project. The same will need approval by JDA before execution.

SCHEDULE - D: TEST OF THE MATERIALS:

The testing of the materials and workmanship shall be conducted by the JDA staff as per prescribed norms. The result of such tests should confirm to the standards and specifications. Qualified personnel as required duly approved by JDA shall have to be engaged at site by the

contractor at his cost. The JDA reserves the right to engage such staff and recover the expenses from the contractor on such account in case of his failure to do so.

SCHEDULE – E: SAMPLES OF THE MATERIALS:

The sample of the materials to be used by the bidder shall be deposited 15 days in advance with the Engineer In charge and be got approval by him before use.

SCHEDULE - F: TIME OF COMPLETION:

The work should start within 10 days of issue of work order and complete within 4.5 months

SCHEDULE – G: NIL

SCHEDULE – H: SPECIAL CONDITION**:**

Attached Separately.

SCHEDULE – I: LIST OF MATERIAL TO BE SUPPLIED BY THE DEPARTMENT

NIL

SCHEDULE – J: COST OF BID DOCUMENTS, PROCESSING FEES & BIDSECURITY.

The Bid processing fees payable to Managing Director R.I.S.L. & Cost of Bid documents &Bid Security is payable to Secretary, JDA, Jaipur will be accepted on line only Kindly refer" Instructions to Bidders" of the bid documents for process of online payment.

Signature of the Bidder
With full Address

Executive Engineer (HQ),
JDA, Jaipur

SECTION I
INSTRUCTION TO BIDDERS (ITB)

Section-I : Instruction to Bidders (ITB)

Important Instruction: - The Law relating to procurement "The Rajasthan Transparency in Public Procurement Act, 2012" [hereinafter called the Act] and the "Rajasthan Public Procurement Rules, 2013" and modified thereof from time to time [hereinafter called the Rules] under the said Act have come into force which are available on the website of State Public Procurement Portal http://sppp.raj.nic.in. Therefore, the Bidders are advised to acquaint themselves with the provisions of the Act and the Rules before participating in the Bidding process. If there is any discrepancy between the provisions of the Act and the Rules and this Bidding Document, the provisions of the Act and the Rules shall prevail.

1.	**General**		
	1.1 Scope of Bid		In support of the Invitation to Bid indicated in the Bid Data Sheet (BDS), the Procuring Entity issues this Bidding Document for the procurement of works as named in the BDS and as Specified in Section V, Procuring Entity's Requirements.
	1.2 Interpretation		Throughout this Bidding Document: (a) The term "in writing" means communicated in written Form through letter, fax, e-mail etc. with proof of receipt. (b) If the context so requires, singular means plural and Vice versa; and "Day" means calendar day.
	1.3 Code of Integrity	1.3.1	Any person participating in the procurement process shall: - i. Not offer any bribe, reward or gift or any material benefit either directly or indirectly in exchange for an unfair advantage in procurement process or to otherwise influence the procurement process; ii. Not misrepresent or omit that misleads or attempts to mislead so as to obtain a financial or other benefit or avoid an obligation; iii. Not indulge in any collusion, bid rigging or anti- competitive behaviour to impair the transparency, fairness and progress of the procurement process; iv. Not misuse any information shared between the Procuring Entity and the Bidders with an intent to gain unfair advantage in the procurement process; v. Not indulge in any coercion including impairing or harming or threatening to do the same, directly or indirectly, to any party or to its property to influence the procurement process; vi. Not obstruct any investigation or audit of a procurement process; vii. Disclose conflict of interest, if any; and viii. Disclose any previous transgressions with any Entity in India or any other country during the last three years or any debarment by any other Procuring Entity.
		1.3.2	Conflict of Interest: A conflict of interest is considered to be a 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. A Bidder may be considered to be in conflict of interest with one or more parties in this bidding process if, including but not limited to: have controlling partners/ shareholders in common; or receive or have received any

			direct or in direct subsidy from any of them; or have the same legal representative for purposes of this Bid; or have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Procuring Entity regarding this bidding process; or The Bidder participates in more than one Bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the Bidder is involved. However, this does not limit the inclusion of the same subcontractor, not otherwise participating as a Bidder, in more than one Bid; or the Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Works that are the subject of the Bid; or The Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as Engineer-in-charge/ consultant for the Contract.
		1.3.3	The Bidder shall have to give a declaration regarding compliance of the Code of Integrity prescribed in the Act, the Rules and stated above in this Clause along with its Bid.
		1.3.4	Breach of Code of Integrity by the Bidder: - Without prejudice to the provisions of Chapter IV of the Rajasthan Transparency in Public Procurement Act, in case of any breach of the Code of Integrity by a Bidder or prospective Bidder, as the case may be, the Procuring Entity may take appropriate action in accordance with the provisions of sub-section (3) of section 11 and section 46 of the Act.
	1.4 Eligible Bidders	1.4.1	Bidder should be registered in AA class category in JDA or equivalent in other departments /PSUs/private or may be a private entity registered under companies act or other relevant acts as applicable.
		1.4.2	JOINT VENTURE: In case the bidder comprises a joint venture or consortium, following requirements shall also be complied with: The JV will have to be formed before submission of the bid and total number of JV partners shall not exceed 2 (Two). They must designate lead partner duly authorized by all the members who will represent the J.V. Of the two partners one with higher stake will be the lead partner. For The lead partner shall be nominated as being partner-in-charge and this authorization shall be evidenced by submitting power of attorney signed by the legally authorized signatories of all the partners. The partner-in- charge (or, the lead partner) shall be authorized to incur liabilities and to receive instructions on the behalf of the partners of the Joint Venture, whether jointly or severely, and entire execution of the contract (including payment) shall be carried out exclusively through the partner- in- charge. The share of one of the two partners shall not be less than 26% and rest of the share shall be held by other partner

			(For example if share of one partner is 26% then for other partner it will be 74%.) The JDA will only send communication to the lead partner, which will be deemed to have been sent to all the J.V. partners. Similarly, any negotiation and / or agreement with the lead partner shall be deemed to have been concluded with all the J.V. partners. All the members of J.V. shall be bound by the said communication and all acts/ deeds of the lead member. Any one of the two partners, alone should fulfill the Technical Criteria Similarly, any one of the two partners, alone should fulfill the Financial Criteria laid down in section –III: Evaluation and qualification. For rest of the eligibility criteria, qualifications of the two partners may be clubbed together.. The individual partner of J.V. alone or with other partners cannot participate in the same bid. For calculation of bid capacity, turn over and work liability of all the firms of joint venture shall be considered together. Attested copy of the MoU / Agreement/ Power of attorney entered into by the joint venture / consortium members duly notarized shall be submitted along with the Technical Bid with intended percentage participation nomination of lead member and division of responsibility to clearly define the work of each member etc. All the members of the joint venture/ consortium shall be jointly and severally liable for the execution of the Contract. In the event of default by any member of the joint venture/ consortium in the execution of his part of the contract, the partner-in-charge will have the authority to assign the work to any other party acceptable to the employer to ensure the execution of the part of contract. If initially the bid has purchased and submitted by the any partner or by the JV firm, in case JV bid accepted, the work order will be issued in favour of name of JV and the bidder will submit details of JV bank account to which payment is to be deposited by JDA. The experience certificate will be issued as per percentage of the shareholders defined in JV agreement of the two partners.
		1.4.3	A Bidder/JV constituting the bidder, shall have the nationality of India. A Bidder shall be deemed to have nationality of a country if the Bidder is a citizen or constituted or incorporated, and operates in conformity with the provisions of the Laws of that country. This criterion shall also apply to the determination of the nationality of proposed Sub-Contractors or suppliers for any part of the Contract including related services
		1.4.4	A Bidder should not have a conflict of interest in the procurement in question as stated in the RTPP Rule 81 and this Bidding document.
		1.4.5	A Bidder debarred under section 46 of the RTPP Act shall not be eligible to participate in any procurement process undertaken by any Procuring Entity, if debarred by the State Government; and a Procuring Entity, if

			debarred by such Procuring Entity.
		1.4.6	Bidder should be registered in AA class category in JDA or equivalent in other departments /PSUs/private or may be a private entity registered under companies act or other relevant acts as applicable.
		1.4.7	(i) Any change in the constitution of the firm, etc., shall be notified forth with by the Bidder in writing to the Procuring Entity and such change shall not relieve any former partner/ member of the firm, etc. from any liability under the Contract. (ii) No new partner/partners shall be accepted in the firm by the Bidder in respect of the contract unless he/they agree to abide by all its terms, conditions and deposit with the Procuring Entity a written agreement to this effect. The Bidder's receipt for acknowledgement or that of any partners subsequently accepted as above shall bind all of them and will be sufficient discharge for any of the purpose of the Contract. (iii) The status of the lead partner/ representative of the Joint Venture, Consortium or Association as a major stake holder shall not change without the consent of the Procuring Entity. New major stake holder must agree to abide by all terms and conditions of the Contract.
		1.4.8	Each Bidder/ JV shall submit only one Bid
		1.4.9	Bidder/JV should be registered under the GST Act and submit the proof of registration before signing the Contract agreement. He is also required to provide proof of Permanent Account Number (PAN) given by Income Tax Department.
2	BID DOCUMENT		
	2.1 Sections of the Bidding Document	2.1.1	The Bidding Document consists of two volumes (volume I & II). Volume I comprises three parts (part I, II, & III) which includes Sections as indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB Clause 2.3 [Amendment of Bidding Document]. (A) Volume-I Part I: Bidding Procedures Section I. Instructions to Bidders (ITB) Section II. Bid Data Sheet (BDS) Section III. Evaluation and Qualification Criteria Part II: Requirements Section IV. Procuring Entity's Requirements. Part III: Contract Section V(A) - General Conditions of Contract [GCC] Section V(B). Special Conditions of Contract [SCC] Section V (C). Contract Forms (B) Volume-II : Financial bid
		2.1.2	The Invitation for Bids (NIB) issued by the Procuring Entity is also part of the Bidding Document.
		2.1.3	The Bidding Document shall be uploaded on the e-procurement portal, eproc.raj.nic.in along with the Notice Inviting Bids. The complete Bidding Document shall also be placed on the State Public Procurement Portal,

			sppp.raj.nic.in. The prospective Bidders may download the bidding document from these portals. The price of the Bidding Document and processing fee of e-bid shall have to be paid to the Procuring Entity in the amount and manner as specified in NIB and e-procurement portal.
		2.1.4	The Procuring Entity is not responsible for the completeness of the Bidding Document and its addenda, if they were not downloaded correctly from the e-procurement portal or the State Public Procurement Portal
		2.1.5	The Bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Document. Failure to furnish all information or authentic documentation required by the Bidding Document may result in the rejection of the Bid.
	2.2 Clarification of Bidding Document and Pre-Bid Meeting	2.2.1	The Bidder shall be deemed to have carefully examined the conditions, specifications, size, make and drawings, etc. of the Works and Related Services to be provided. If any Bidder has any doubts as to the meaning of any portion of the conditions or of the specifications, drawings etc., it shall, before submitting the Bid, refer the same to the Procuring Entity and get clarifications. A Bidder requiring any clarification of the Bidding Document shall contact the Procuring Entity in writing or e-mail at the Procuring Entity's address indicated in the BDS. The Procuring Entity will respond to all raised queries in pre bid meeting. Minutes of pre bid meeting shall be uploaded on the e-procurement portal, state public procurement portal and shall be sent to all bidders who will participating in pre bid meeting prior to the dead line of submission of bids as specified in ITB Sub-Clause 4.2.1 [Deadline for Submission of Bids]. The pre bid minutes issued by procurement entity shall then become part of the bid document and shall read as addendum to bid document.
		2.2.2	The Bidder or his authorized representative may attend the pre bid meeting on the specified date and time as mentioned in NIB. The purpose of pre bid meeting will be to clarify issues and to answer question on any matter related to this procurement that may be raised. If required, site visit may be arranged by the procuring entity.
		2.2.3	The Bidder is requested, to submit questions in writing, to reach the Procuring Entity not later than one week before the date of Pre-Bid Meeting.
		2.2.4	At any time prior to the deadline for submission of the Bids, the Procuring Entity, suo motto, may also amend the Bidding Document, if required, by issuing an addendum which will form part of the Bidding Document
		2.2.5	Non-attendance at the Pre-Bid Conference will not be a cause for disqualification of a Bidder.
	2.3 Amendment of Bidding Document	2.3.1	Any addendum issued shall be part of the Bidding Document and shall be uploaded on the State Public Procurement Portal and the e-procurement portal.
		2.3.2	To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Procuring Entity may, at its discretion, extend the deadline for the submission of the Bids, pursuant to ITB

			Sub-Clause 4.2 [Deadline for Submission of Bids], under due publication on the State Public Procurement Portal and the e-procurement portal and newspapers.
3	Preparation of Bids		
	3.1 Cost of Bidding	3.1.1	The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
		3.1.2	The Bidder shall furnish the scanned attested copies of following documents with its Bid: - i. Partnership Deed and valid registration certificate with the Registrar of Firms in case of Partnership Firms and private entity are also permitted. Power of Attorney in favour of the partner signing/submitting the Bid, authorizing him to represent all partners of the firm. ii. GST registration certificate and Permanent Account Number (PAN) given by the Income Tax Department. iii. Address of residence and office, telephone numbers, e-mail address iv. Certificate of Registration and Memorandum of Association issued by Registrar of Companies in case of a registered company and in case of any other statutory or registered body, certificate of incorporation or registration issued by concerned authorities. Power of attorney in favour of the person signing the Bid. v. Where permitted to bid as Joint Venture, Consortium or Association, letter of formal intent to enter in to an agreement or an existing agreement in the form of a Joint Venture, Consortium or Association.
	3.2 Language of Bid	3.2.1	The Bid, as well as all correspondence and documents relating to the Bid between Bidder and the Procuring Entity, shall be written in English/ Hindi. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages duly accepted by the Bidder in English/ Hindi in which case, for purposes of interpretation of the Bid, such translation shall govern
	3.3 Documents Comprising the Bid	3.3.1	The bidders shall submit the bid online with all pages numbered serially and by giving index of submissions. Bid should be submitted as follows : (a) Two-envelope system would be adopted, for POST QUALIFICATION. Envelope-1 being for Technical Bid and Envelope - 2 being for Financial Bid. Each envelope would be sealed separately and super scribed as "Envelope-1 Technical Bid" and "Envelope-2 Financial Bid". Both envelopes would be placed in Third envelope duly sealed, bearing the name of work and the name of the bidding contractor. In this third envelope, envelop of earnest money, GST certificate and copy of registration of contractor in required category should also be kept.

			(E-Bid procedure at http ://eproc.rajastha.gov.in) (b) The technical bid will be opened only of those bidders whose proper Bid Security (Earnest money), GST certificate, Copy of PAN Card and copy of registration of contractor in required category are found to be in order.
		3.3.2	The Technical Bid shall contain the following: i. Technical Bid Submission Sheet and Technical Bid containing the filled-up Bidding Forms and Declarations related to Technical Bid]; ii. proof of payment of price of Bidding Document, processing fee, Bid Security, in accordance with ITB Clause 3.10; iii. written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB Clause 3.11; iv. documentary evidence in accordance with ITB Clause 3.7 establishing the Bidder's eligibility to bid; v. documentary evidence in accordance with ITB Clause 3.8 establishing the Bidder's qualifications to perform the contract if its Bid is accepted; vi. the Notice Inviting Bids; vii. any other document required in the BDS; and viii. Others considered necessary to strengthen the Bid submitted.
		3.3.3	The Financial Bid/ Price Proposal shall contain the following: Financial Bid/ Price Proposal Submission Sheet and the applicable Price Schedules, in accordance with ITB Clauses 3.4, 3.5; Any other document required in the Bid documents.
	3.4 Bid Submission Sheets and Price Schedules	3.4.1	The Bidder shall submit the Technical Bid and Financial Bid using the Bid Submission Sheets provided. These forms must be completed without any alterations to their format, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.
		3.4.2	The Bidder shall submit as part of the Financial Bid, the Price Schedules for Works, using the forms
	3.5 Bid Prices	3.5.1	Total Price which the Bidder wants to charge for the entire Works with all its contingencies in accordance with drawings and specifications shall be quoted (in figures and words) by the Bidder. The quoted amount shall be specified in the financial bid in order to regulate the amount to be added to or deducted from the fixed sum on account of additions and alterations not covered by the Contract. Payments shall be linked to various stages of completion of the Works specified in Activity Schedule given in Section V C Special Condition of Contact.
		3.5.2	Prices quoted by the Bidder shall be fixed during the Execution of the work and not subject to variation on any account, unless otherwise specified in the BDS. A Bid submitted with an adjustable price quotation shall be treated as non-responsive and shall be rejected, pursuant to ITB Clause 5.7 [Responsiveness of

			Bids]. However, if in accordance with the BDS, prices quoted by the Bidder shall be subject to adjustment during the performance of the Contract, a Bid submitted with a fixed price quotation shall not be rejected, but the price adjustment shall be treated as zero.
		3.5.3	All duties, taxes and other levies payable by the Bidder under the contract, or for any other cause, shall be included in the rates and prices, and the total Bid Price submitted by the Bidder.
	3.6 Currencies of Bid	3.6.1	The rates quoted by the Bidder shall be in Indian Rupees. All payments shall be made in Indian Rupees only.
	3.7 Documents Establishing the Eligibility of the Bidder	3.7.1	To establish their eligibility in accordance with ITB Clause 1.4 [Eligible Bidders], Bidders shall: complete the eligibility declarations in the Bid Submission Sheet and Declaration Form. If the Bidder is an existing or intended Joint Venture [JV], Consortium or Association in accordance with ITB Sub-Clause 1.4.1, shall submit a copy of the Agreement, or a letter of intent to enter into such Agreement. The respective document shall be signed by all legally authorized signatories of all the parties to the existing or intended JV, Consortium or Association as appropriate; and the existing or intended JV shall authorize an individual/ partner in one of the firms as lead partner of the JV to act and commit all the partners of JV for the Bid.
	3.8 Documents Establishing the Qualifications of the Bidder	3.8	To establish its qualifications to perform the Contract, the Bidder shall submit as part of its Technical Proposal the documentary evidence indicated for each qualification criteria specified in Section III, [Evaluation and Qualification Criteria].
	3.9 Period of Validity of Bids	3.9.1	Bids shall remain valid for 120 days after the Bid submission deadline date as specified by the Procuring Entity. A Bid valid for a shorter period shall be rejected by the Procuring Entity as non-responsive
		3.9.2	In exceptional circumstances, prior to the expiration of the Bid validity period, the Procuring Entity may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. The Bid Security or a Bid Securing Declaration in accordance with ITB Clause 3.10 [Bid Security] shall also be got extended for thirty days beyond the dead line of the extended validity period. A Bidder may refuse the request without forfeiting its Bid Security or a Bid Securing Declaration. A Bidder granting the request shall not be permitted to modify its Bid.
	3.10 Bid Security	3.10.1	EMD shall be @2% of estimated procurement cost i.e. Rs. 36.28 Lakhs for the bidder registered in appropriate equivalent class in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act or 0.5% of estimated procurement cost i.e. Rs. 9.07 Lakhs for the bidder registered as contractor for AA class in JDA. In case of JV please see table below.

EMD 0.5% shall be applicable for	If both firm in JV are registered in AA class in JDA.
EMD 2.0% shall be	In the rest condition in JV, EMD shall b applicable 2.0% of estimated procuremen

			applicable for	cost i.e. a) If one bidder registered in AA Class category in JDA, and other registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act. b) If both bidder are registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act.
			Bid Security deposit can be deposited either online or in the form of Bank Guarantee in favour of Secretary, JDA, Jaipur payable at Jaipur. The bidder will provide details of BG viz No., issue date, expiring date etc on online tendering system of JDA. The original BG will be physically handed over in JDA as detailed below. A copy of this BG is to be attached with the document during uploading.	
		3.10.2	Bid Security of a Bidder lying with the Procuring Entity in respect of other Bids awaiting decision shall not be adjusted towards Bid Security for this Bid. The Bid Security originally deposited may, however be taken into consideration in case Bids are re-invited.	
		3.10.3	The issuer of the Bid Security and the confirmer, if any, of the Bid Security, as well as the form and terms of the Bid Security, must be acceptable to the Procuring Entity.	
		3.10.4	Prior to submitting its Bid, a Bidder may request the Procuring Entity to confirm the acceptability of a proposed issuer of a Bid Security or of a proposed confirmer, if different than as specified in ITB Clause 3.10.3. The Procuring Entity shall respond promptly to such a request.	
		3.10.5	The bank guarantee presented as Bid Security shall be got confirmed from the concerned issuing bank. However, the confirmation of the acceptability of a proposed issuer or of any proposed confirmer does not preclude the Procuring Entity from rejecting the Bid Security on the ground that the issuer or the confirmer, as the case may be, has become insolvent or is under liquidation or has otherwise ceased to be creditworthy.	
		3.10.6	The Bid Security of unsuccessful Bidders shall be refunded soon after final acceptance of successful Bid and signing of Contract Agreement and submitting Security deposit by successful Bidder pursuant to ITB Clause 6.4 [Security deposit].	
		3.10.7	The Bid Security from a Bidder shall be recovered /forfeited in the following cases namely :- (a) When the Bidder withdraws, or modifies his Bid after opening of Bids; or (b) when the Bidder does not execute the agreement in accordance with ITB Clause 6.3 [Signing of Contract] after issue of letter of acceptance/ placement of Work order within the specified time period; or (c) when the Bidder fails to commence the Works as per Work Order within the time specified; or (d) when the Bidder does not deposit the Security deposit	

			in accordance with ITB Clause 6.4 [Security deposit]; in the prescribed time limit after the work order is placed; or (e) if the Bidder breaches any provision of the Code of Integrity prescribed for Bidders in the Act and Chapter VI of the Rules or as specified in ITB Clause 1.3 [Code of Integrity]; or (f) if the Bidder does not accept the correction of its Bid Price pursuant to ITB Sub-Clause 5.5 [Correction of Arithmetical Errors].
		3.10.8	In case of the successful bidder, the amount of Bid Security may be adjusted in arriving at the amount of the Security deposit, or refunded if the successful bidder furnishes the full amount of Security deposit. No interest will be paid by the Procuring Entity on the amount of Bid Security.
		3.10.9	The Procuring Entity shall promptly refund the Bid Security of the Bidders at the earliest of any of the following events, namely: - **(a)** The expiry of validity of Bid Security; **(b)** The execution of agreement for procurement/O&M and Security deposit is furnished by the successful bidder on part of execution/O&M hence shall be refunded in two parts accordingly. **(c)** The cancellation of the procurement process; Or The withdrawal of Bid prior to the deadline for presenting Bids, unless the Bidding Document stipulates that no such withdrawal is permitted.
		3.10.10	The Bid Security of a Joint Venture, Consortium or Association must be in the name of the Joint Venture, Consortium or Association that submits the Bid. If the Joint Venture, Consortium or Association has not been legally constituted at the time of Bidding, the members of the proposed consortium or JV shall enter in to an Agreement to form a legally constituted JV after the issue of Letter of Acceptance/Letter of Intent to them and also declare a partner as the lead partner in whose name the Bid Security may be submitted.
	3.11 Format and Signing of Bid	3.11.1	**All pages of the Technical and Financial Bid shall be digitally signed by the Bidder or authorized signatory on behalf of the Bidder.** This authorization shall consist of a written confirmation and shall be attached to the Bid. In case of a Joint Venture, Consortium or Association, if the Joint Venture, Consortium or Association has not been legally constituted at the time of Bidding, all the members of the proposed Joint Venture, Consortium or Association shall digitally sign the Bid.
4	**Submission and Opening of Bids**		
	4.1 Sealing and Marking of Bids	4.1.1	Bidders shall submit their Bids to the Procuring Entity electronically only on the e-procurement portal, www.eproc.rajasthan.gov.in. In submission of their Bids, the Bidders should follow the step by step instructions given on the e-procurement portal
		4.1.2	The Bidder shall enclose the Technical Bid and the Financial Bid in separate covers. The proof of payment of price of Bidding Document, processing fee and Bid Security shall be enclosed in third cover. The price of Bidding Document and Bid Security shall be paid in the name of the Procuring Entity and the processing fee shall

			be paid in the name of RISL.
	4.2 Deadline for Submission of Bids	4.2.1	Bids shall be submitted electronically only up to the time and date specified in the Notice Inviting Bids and BDS or an extension issued thereof.
	4.3 Withdrawal, Substitution and Modification of Bids	4.3.1	A Bidder may withdraw, substitute or modify its Bid after it has been submitted by submitting electronically on the e-procurement portal. A written Withdrawal/ Substitutions/ Modifications etc. Notice on the e-procurement portal, duly digitally signed by the Bidder or his authorized representative, and shall include a copy of the authorization in accordance with ITB Sub- Clause 3.11.1 [Format and Signing of Bid]. The corresponding Withdrawal, Substitution or Modification of the Bid must accompany the respective written Notice. All Notices must be received by the Procuring Entity on the e-procurement portal prior to the deadline specified for submission of Bids in accordance with ITB Sub-Clause 4.2. [Deadline for Submission of Bids].
		4.3.2	No Bid shall be withdrawn, substituted or modified in the interval between the deadline for submission of the Bid and the expiration of the period of Bid validity specified in ITB Clause 3.9. [Period of Validity of Bids] or any extension thereof.
	4.4 Bid Opening	4.4.1	The electronic Technical Bids shall be opened by the Bid opening committee constituted by the Procuring Entity at the time, date and place specified in the Bid Data Sheet in the presence of the Bidders or their authorized representatives, who choose to be present.
		4.4.2	The Bidders may choose to witness the electronic Bid opening procedure online.
		4.4.3	The Financial Bids shall be kept unopened until the time of opening of the Financial Bids. The date, time and location of electronic opening of the Financial Bids shall be intimated to the bidders who are found qualified by the Procuring Entity in evaluation of their Technical Bids.
		4.4.4	The Bid opening committee shall prepare a list of the Bidders or their representatives attending the opening of Bids and obtain their signatures on the same. The list shall also contain the representative's name and telephone number and corresponding Bidders' names and addresses. The authority letters brought by the representatives shall be attached to the list. The list shall be signed by all the members of Bids opening committee with date and time of opening of the Bids.
		4.4.5	First, covers marked as "WITHDRAWAL" shall be opened, read out, and recorded and the covers containing the corresponding Technical Bids and Financial Bids shall not be opened. No Bid shall be permitted to be withdrawn unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is readout and recorded at Bid opening. If the withdrawal notice is not accompanied by the valid authorization, the withdrawal shall not be permitted and the corresponding Technical Bid shall be opened. Next, covers containing Scanned copy of online payments and registration certificate shall be opened, read out, and recorded.

			Next, covers marked as "SUBSTITUTION Technical Bid" shall be opened, read out, recorded. The covers containing the Substitution Technical Bids and/ or Substitution Financial Bids shall be exchanged for the corresponding covers being substituted. Only the Substitution Technical Bids shall be opened, read out, and recorded. Substitution Financial Bids will remain unopened in accordance with ITB Sub-Clause 4.4.4. No Bid shall be substituted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out and recorded at Bid opening Covers marked as "MODIFICATION Technical Bid" shall be opened thereafter, read out and recorded with the corresponding Technical Bids. No Technical Bid and/ or Financial Bid shall be modified unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at opening of Technical Bids. Only the Technical Bids, both Original as well as Modification is to be opened, read out, and recorded at the opening. Financial Bids, both Original as well as Modification, will remain unopened in accordance with ITB Sub-Clause 4.4.4.
		4.4.6	All other covers containing the Technical Bids shall be opened one at a time and the following read out the name of the Bidder, whether there is a modification or substitution; whether proof of payment of Bid Security or Bid Securing Declaration, if required, payment of price of the Bidding Document and processing fee have been enclosed Any other details as the Bids opening committee may consider appropriate
		4.4.7	After all the Bids have been opened, their hard copies shall be printed and shall be initialled and dated on the first page and other important papers of each Bid by the members of the Bids opening committee. Only Technical Bids shall be read out and recorded at the bid opening and shall be considered for evaluation. No Bid shall be rejected at the time of opening of Technical Bids except Alternative Bids (if not permitted) and Bids not accompanied with the proof of payment of the required price of Bidding Document, processing fee and Bid Security.
		4.4.8	The Bids opening committee shall prepare a record of opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, modification, or alternative offer (if they were permitted), any conditions put by Bidder and the presence or absence of the price of Bidding Document, processing fee and Bid Security. The Bidders or their representatives, who are present, shall sign the record. The members of the Bids opening committee shall also sign the record with date.
		4.4.9	After completion of the evaluation of the Technical Bids, the Procuring Entity shall invite Bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified to attend the electronic opening of the Financial Bids. The date, time, and location of the opening of Financial Bids will be intimated in writing by the Procuring Entity. Bidders shall be given reasonable notice of the opening of

			Financial Bids.
		4.4.10	The Procuring Entity shall notify Bidders in writing whose Technical Bids have been rejected on the grounds of being substantially non-responsive and not qualified in accordance with the requirements of the Bidding Document
		4.4.11	The Bids opening committee shall conduct the electronic opening of Financial Bids of all Bidders who submitted substantially responsive Technical Bids and have qualified in evaluation of Technical Bids, in the presence of Bidders or their representatives who choose to be present at the address, date and time specified by the Procuring Entity.
		4.4.12	All covers containing the Financial Bids shall be opened at the time & date and the following read out and recorded- the name of the Bidder; whether there is a modification or substitution; the Bid Prices; any other details as the Bids opening committee may consider appropriate After all the Bids have been opened, their hard copies shall be printed and shall be initial and dated on the first page of each Bid by the members of the Bids opening committee. All the pages of the Price Schedule and letters, Bill of Quantities attached shall be initialled and dated by the members of the committee. Key information shall be encircled and unfilled spaces in the Bids shall be marked and signed with date by the members of the Bids opening committee.
		4.1.13	The Bids opening committee shall prepare a record of opening of Financial Bids that shall include as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification, the Bid Price, any conditions, any discounts and alternative offers (if they were permitted). The Bidders or their representatives, who are present, shall sign the record. The members of the Bids opening committee shall also sign the record with date.
5.	**Evaluation and Comparison of Bids**		
	5.1 Confidentiality	5.1.1	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 until information on Contract award is communicated to all Bidders.
		5.1.2	Any attempt by a Bidder to influence the Procuring Entity in its examination of qualification, evaluation, comparison of the Bids or Contract award decisions may be resulting in the rejection of its Bid, in addition to the legal action which may be taken by the Procuring Entity under the Act and the Rules.
	5.2 Clarification of Technical or Financial Bids	5.2.1	To assist in the examination, evaluation, comparison and qualification of the Technical or Financial Bids, the Bid evaluation committee may, at its discretion, ask any Bidder for a clarification regarding his Bid. The committee's request for clarification and the response of the Bidder shall be in writing.
		5.2.2	Any clarification submitted by a Bidder with regard to His Bid that is not in response to a request by the Bid evaluation committee shall not be considered.

		5.2.3	No change in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetical errors discovered by the Bid evaluation committee in the evaluation of the financial Bids.
		5.2.4	No substantive change to qualification information or to a submission, including changes aimed at making an unqualified Bidder, qualified or an unresponsive submission, responsive shall be sought, offered or permitted.
	5.3 Deviations, Reservations and Omissions in Technical or Financial Bids	5.3.1	During the evaluation of Technical or Financial Bids, the following definitions apply: i.) "Deviation" is a departure from the requirements specified in the Bidding Document; ii.) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and iii.) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.
	5.4 Nonmaterial Non-conformities in Technical or Financial Bids	5.4.1	Provided that a Technical or Financial Bid is substantially responsive, the Procuring Entity may waive any non-conformities (with recorded reasons) in the Bid that do not constitute a material deviation, reservation or omission.
		5.4.2	Provided that a Technical or Financial Bid is substantially responsive, the Procuring Entity may request the Bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Request for information or documentation on such nonconformities shall not be related to any aspect of the Financial Proposal of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
	5.5 Correction of Arithmetical Errors in Financial Bid	5.5.1	Provided that a Financial Bid is substantially responsive, the Bid evaluation committee shall correct arithmetical errors during evaluation of Financial Bid on the following basis: i. 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 Procuring Entity 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; ii. 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; and iii. 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 (i) and (ii) above.
		5.5.2	If the Bidder that submitted the lowest evaluated Bid does not accept the correction of errors, its Bid shall be disqualified and its Bid Security shall be forfeited or its Bid Securing Declaration shall be executed.

	5.6 Preliminary Examination of Technical or Financial Bids	5.6.1	The Procuring Entity shall examine the Technical or Financial Bids to confirm that all documents and technical documentation requested in ITB Sub-Clause 3.3 [Documents Comprising the Bid] have been provided, and to determine the completeness of each document submitted.
		5.6.2	The Procuring Entity shall confirm, following the opening of the Technical or Financial Bids, that the following documents and information have been provided: i. Bid is signed, as per the requirements listed in the Bidding documents; ii. Bid has been sealed as per instructions provided in the Bidding documents; iii. Bid is valid for the period, specified in the Bidding documents; iv. Bid is accompanied by Bid Security or Bid securing declaration; v. Bid is unconditional and the Bidder has agreed to give the required security deposit; vi. Price Schedules in the Financial Bids are in accordance with ITB Clause 3.4 [Bid Submission Sheets and Price Schedules]; vii. written confirmation of authorization to commit the Bidder; viii. Declaration by the Bidder in compliance of Section 7 and 11 of the Act; and ix. Other conditions, as specified in the Bidding Document are fulfilled.
	5.7 Responsiveness of Technical or Financial Bids	5.7.1	The Procuring Entity's determination of the Responsiveness of a Technical or Financial Bid is to be based on the contents of the Bid itself, as defined in ITB Sub-Clause 3.3 [Documents Comprising the Bid].
		5.7.2	A substantially responsive Technical or Financial Bid is one that meets without material deviation, reservation, or omission to all the terms, conditions, and specifications of the Bidding Document. A material deviation, reservation, or omission is one that: if accepted, would- i. affect in any substantial way the scope, quality, or performance of the Goods and Related Services specified in Section V, Schedule of Supply; or limits in any substantial way, inconsistent with the Bidding Document, the Procuring Entity'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.
		5.7.3	The Procuring Entity shall examine the technical aspects of the Bid in particular, to confirm that requirements of Section IV, Procuring Entity's Requirements have been met without any material Deviation, reservation, or omission.
		5.7.4	If a Technical or Financial Bid is not substantially responsive to the Bidding Document, it shall be rejected by the Procuring Entity and may not subsequently be made responsive by the Bidder by Correction of the material deviation, reservation, or omissions.
	5.8 Examination of	5.8.1	The Procuring Entity shall examine the Bids to confirm

	Terms and Conditions of the Technical or Financial Bids		that all terms and conditions specified in the GCC and the SCC have been accepted by the Bidder without any material deviation or reservation.
		5.8.3	The Procuring Entity shall evaluate the technical aspects of the Bid submitted in accordance with ITB Clauses 3.3 [Documents Comprising the Bid] and to confirm that all requirements specified in Section IV [Procuring Entity's Requirements] of the Bidding Document and all amendments or changes requested by the Procuring Entity in accordance with ITB clause 2.3 [Amendment of Bidding Document] have been met without any material deviation or reservation.
	5.9 Evaluation of Qualification of Bidders in Technical Bids	5.9.1	The determination of qualification of a Bidder in evaluation of Technical Bids shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB Clause 3.8 [Documents Establishing the Qualifications of the Bidder] and in accordance with the qualification criteria indicated in Section III [Evaluation and Qualification Criteria]. Factors not included in Section III, shall not be used in the Evaluation of the Bidder's qualification.
	5.10 Evaluation of Financial Bids	5.10.1	The Procuring Entity shall evaluate each Financial Bid, the corresponding Technical Bid of which has been determined to be substantially responsive
		5.10.2	To evaluate a Financial Bid, the Procuring Entity shall only use all the criteria and methodologies defined in this Clause and in Section III, Evaluation and Qualification Criteria. No other criteria or methodology shall be permitted.
		5.10.3	To evaluate a Financial Bid, the Procuring Entity shall consider the following: i). the Bid Price quoted in the Financial Bid; ii) price adjustment for correction of arithmetical errors in accordance with ITB Clause 5.5[Correction of Arithmetical Errors]; iii) Adjustment of bid prices due to rectification of nonmaterial nonconformities or omissions in accordance with ITB Sub Clause 5.4.3 [Nonmaterial Nonconformities in Bids], if applicable.
		5.10.14	If the Bid, which results in the lowest evaluated Bid Price, is considered to be seriously unbalanced, or front loaded, in the opinion of the Procuring Entity, the Procuring Entity may require the Bidder to produce detailed rate analysis for any or all items to demonstrate the internal consistency of those rates with the construction methods and schedule proposed. If the rate justification is not satisfactory submitted by the bidder, the bid of such bidder may be rejected.
	5.11 Negotiations		
		5.11.1	To the extent possible, no clarifications shall be Conducted after the pre-Bid stage. All clarifications needed to be sought shall be sought in the pre-Bid stage itself.
		5.11.2	Negotiations may be undertaken only with the lowest Bidder when the rates quoted are considered much higher than the prevailing market rates.
		5.11.3	The Competent committee shall have full powers to undertake negotiations. Detailed reasons and results of

			negotiations shall be recorded in the proceedings.
		5.11.4	The lowest Bidder shall be informed about negotiations in writing either through messenger or by registered letter and e-mail (if available). A minimum time of seven days shall be given for calling negotiations. In case of urgency, the competent committee, after recording reasons, may reduce the time, provided the lowest Bidder has received the intimation and consented to holding of negotiations.
		5.11.5	Negotiations shall not make the original offer made by the Bidder inoperative. The competent committee shall have option to consider the original offer in case the Bidder decides to increase rates originally quoted or imposes any new terms or conditions.
		5.11.6	In case of non-satisfactory achievement of rates from lowest Bidder, the Bid evaluation committee may choose to make a written counter offer to the lowest Bidder and if this is not accepted by him, the committee may decide to reject and re-invite Bids or to make the same counter-offer first to the second lowest Bidder, then to the third lowest Bidder and so on in the order of their initial standing in the bid evaluation and work order be awarded to the Bidder who accepts the counter-offer.
		5.11.7	In case the rates even after the negotiations are considered very high, fresh Bids shall be invited.
	5.12 Procuring Entity's Right to Accept Any Bid, and to Reject Any or All Bids	5.12.1	The Procuring Entity reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids at any time prior to Contract award without assigning any reasons thereof and without there by incurring any liability to the Bidders.
6.	**Award of Contract**		
	6.1 Procuring Entity's Right to Vary Quantities	6.1.1	If the Procuring Entity does not procure any subject matter of procurement or procures less than the quantity specified in the Bidding Document due to change in circumstances, the Bidder shall not be entitled for any claim or compensation except Otherwise provided in the Bidding Document.
	6.2 Acceptance of the successful Bid and award of contract	6.2.1	The Procuring Entity after considering the recommendations of the Bid Evaluation Committee and the conditions of Bid, if any, financial implications, samples, test reports, etc., shall accept or reject the successful Bid.
		6.2.2	Before award of the Contract, the Procuring Entity shall ensure that the price of successful Bid is reasonable and consistent with the required specifications.
		6.2.3	A Bid shall be treated as successful only after the competent authority has approved the procurement in terms of that Bid.
		6.2.4	The Procuring Entity shall award the contract to the Bidder whose offer is the lowest in accordance with the evaluation criteria.
		6.2.5	Prior to the expiration of the period of validity of Bid, the Procuring Entity shall inform the successful Bidder in writing, by registered post or email, that its Bid has been accepted.
	6.3 Signing of Contract	6.3.1	In the written intimation of acceptance of its Bid sent to the successful Bidder, it shall also be requested to execute an agreement in the format given in the Bidding

			Document on a non-judicial stamp of requisite value at his cost and deposit the Security deposit or a Security deposit Declaration, if applicable, within a period specified in the BDS. In case the successful bidder is a JV still to be legally constituted, all parties to the JV shall sign the Agreement.
		6.3.2	If the Bidder, whose Bid has been accepted, fails to sign a written procurement contract or fails to furnish the required Security deposit or Security deposit Declaration within the specified time period, the Procuring Entity shall forfeit the Bid Security of the successful bidder / execute the Bid Securing Declaration and take required action against it as per the provisions of the Act and the Rules.
		6.3.3	The Bid Security, if any, of the Bidders whose Bids could not be accepted shall be refunded soon after the contract with the successful Bidder is signed and his Security deposit is obtained. Until a formal contract is executed, LOA shall constitute a binding contract.
	6.4 Security deposit	6.4.1	Security deposit shall be solicited from the successful Bidder except State Govt. Departments and undertakings, corporations, autonomous bodies, registered societies, co-operative societies which are owned or controlled or managed by the State Government and undertakings of Central Government. However, a Security deposit Declaration shall be taken from them.
		6.4.2	(i) The amount of Security deposit shall be three percent (3%) of the amount of the Work Order. The currency of Security deposit shall be Indian Rupees.
		6.4.3	Security deposit shall be furnished in one of the following forms as applicable- a). Deposit through eGRAS; or b). Bank Draft or Banker's Cheque of a Scheduled Bank in India in favour of Secretary, JDA, Jaipur; or c). National Savings Certificates and any other script/ instrument under National Savings Schemes for promotion of small savings issued by a Post Office in Rajasthan, if the same can be pledged under the relevant rules. They shall be accepted at their surrender value at the time of Bid and formally transferred in the name of the Procuring Entity with the approval of Head Post Master; or d). Bank guarantee in favour of Secretary JDA, Jaipur payable at Jaipur. It shall be got verified from the issuing bank. Other conditions regarding bank guarantee shall be same as specified in ITB Sub-Clause 3.10 [Bid Security]; or e). Fixed Deposit Receipt (FDR) of a Scheduled Bank. It shall be in the name of the Procuring Entity on account of Bidder and discharged by the Bidder in advance. The Procuring Entity shall ensure before accepting the Fixed Deposit Receipt that the Bidder furnishes an undertaking from the bank to make payment/ premature payment of the Fixed Deposit Receipt on demand to the Procuring Entity without requirement of consent of the Bidder concerned. In the event of forfeiture of the Security deposit, the Fixed Deposit shall be forfeited along with interest earned on such Fixed Deposit. f). The successful Bidder at the time of signing of the

			Contract agreement, may submit option for deduction of Security deposit from each running and final bill @ 3% of the amount of the bill.
		6.4.4	Security deposit furnished in the form of a document mentioned at options (a) to (e) of Sub-Clause 6.4.3 above, shall remain valid for a period of sixty days beyond defect liability period.
		6.4.5	Failure of the successful Bidder to submit the Security deposit in accordance to 6.4.3 above and sign the Contract accordingly shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event, the Procuring Entity may either cancel the procurement process or if deemed appropriate, award the Contract at the rates of the lowest Bidder, to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Procuring Entity to be qualified to perform the Contract satisfactorily.
		6.4.6	Forfeiture of Security deposit: Amount of Security deposit in full or part may be forfeited in the following cases: - when the Bidder does not execute the agreement in accordance with ITB Clause 6.3 [Signing of Contract] within the specified time; after issue of letter of acceptance; **or** when the Bidder fails to commence the Works as per Work order within the time specified; **or** when the Bidder fails to complete Contracted Works satisfactorily within the time specified; **or** when any terms and conditions of the contract is breached; **or** to adjust any established dues against the Bidder from any other contract with the Procuring Entity; **or** if the Bidder breaches any provision of the Code of Integrity prescribed for the Bidders specified in the Act, Chapter VI of the Rules and this Bidding Document. Notice of reasonable time will be given in case of forfeiture of Security deposit. The decision of the Procuring Entity in this regard shall be final.

SECTION II
BIDDING DATA SHEET

This section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section I: Instructions to Bidders.

Contents

A. Introduction

ITB. 1.1.1	The Number of the Invitation for Bids (NIB) is: JDA/EE-HQ/11/2022-23 The Member of the Invitation for Bids is: **Jaipur Development Authority.** **Name of Work: Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur** (Detailed Scope of work has been defined in Section IV: Procuring Entity's Requirement)
1.1.2	**Period of Completion**: Construction work in all respect shall be completed in 5 months from the Start Date, which shall be the stipulated date of commencement mentioned in work order.
1.1.3	**Estimated Cost of work is: Rs. 18.14 Crore.**
ITB 1.4.1	Joint Ventures / Consortium are permitted comprising not more than **2 (two)** firms/companies. **The maximum equity under JV/Consortium of lead firm should be 74% and another firm 26%**
ITB 1.4.2	**"Bidders of Indian Nationality"** are permissible**.**
ITB 1.4.3	Bidder should be registered in AA class category in JDA or equivalent in other departments /PSUs/private or may be a private entity registered under companies act or other relevant acts as applicable.
ITB 1.4.4	The bidding process is open to bidders who fulfil the prescribed eligibility criteria.
ITB 1.4.5	Each bidder shall upload on-line / submit only one bid for one work. A bidder who submits or participates in more than one bid for the particular Works will be disqualified.

B. Bidding Documents

ITB 2.1.3	This is an "on-line tender". Therefore, tender documents in physical form shall not be available for sale but can be downloaded from the website and pay cost (Rs 1,000/-) while submitting the filled-up Bidding document to the Procuring Entity along with the processing fee of Rs 1,000/- separately in favor of MD RISL, Jaipur. The bidder should submit, by date & time specified in NIB, in original, hard copies of (i) cost of bid document as Rs. 1,000/-Online (ii) Bid processing fee of Rs. 1,000/- online to Managing Director, RISL, Jaipur payable; (iii) Bid Security as per RTPP; (iv) Letter of Technical Bid; (v) Power of Attorney; and (vi) Joint Venture Agreement, if applicable. The bidder should upload scanned copies of these documents on e-procurement website along with their technical bids.
ITB 2.2.1	**For Clarification purposes only, the Procuring Entity's address is:** OFFICE OF THE EXECUTIVE ENGINEER HQ Jaipur Development Authority ROOM NO 143, FF, Main Building Ram Kishor Vyas Bhawan, Indira Circle, Jawahar Lal Nehru Marg, Jaipur-302004 EPABX +91 -141-2569696 Ext.- 4101 : Fax +91-141- 2574555 email : sapanmishra.jda@rajasthan.gov.in
ITB 2.2.2	Pre bid Meeting to be held as below: Date 28-07-2022

	Time: **3.00 PM** Venue: **Manthan Hall Jaipur Development Authority.** No site visit shall be organized by the procuring entity. However, bidder are advised to visit the sites at their own expenses and if any support is required, shall be provided by the JDA.
ITB 2.2.3	The Bidders are requested, to submit questions in writing, to reach the Procuring Entity.
ITB 2.3.1	Any addendum issued shall be part of the Bidding Document and shall be uploaded on the State Public Procurement Portals http://sppp.rajasthan.gov.in/ and http://eproc.rajasthan.gov.in or www.jda.urban.rajasthan.gov.in
ITB 2.3.2	To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Procuring Entity may, at its discretion, extend the deadline for the submission of the Bids, pursuant to ITB Sub-Clause 4.2 [Deadline for Submission of Bids], under due intimation to the Bidders by uploading it on the State Public Procurement Portal and its e-procurement portal.

C. Preparation of Bids

ITB 3.2.1	The language of the bid shall be **English**
ITB 3.3.1	The online Bid shall comprise of two parts submitted simultaneously, one containing the Technical Bid/ Proposal and the other the Financial or Price Bid/ Proposal.
ITB 3.3.2	The Bidder shall submit the forms, declarations and documents, as specified in Section IV of Bid Document, with the Technical Bid:
ITB 3.3.3	The Bidder shall submit the following additional documents with its Technical Bid: i. Technical Bid/Proposal Submission Sheet and Technical Bid containing the filled-up Bidding Forms and Declarations related to Technical Bid, possession of required qualifications and Code of Integrity given in Section IV [Bidding Forms]; ii. Proof of payment of price of Bidding Document, processing fee and Bid Security in accordance with ITB Clause 3.10; iii. Written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB Clause 3.11; iv. Documentary evidence in accordance with ITB Clause 3.7 establishing the Bidder's eligibility to bid; v. Documentary evidence in accordance with ITB Clause 3.8 establishing the Bidder's qualifications to perform the contract if its Bid is accepted; vi. The Notice Inviting Bids; vii. The PAN No. (Permanent Account Number) of Income tax with the Xerox copy of the PAN card. viii. Alternative bids shall not be permitted. ix. Alternative times for completion shall not be permitted. (However, this does not prohibit the successful bidder from completing the work as per specifications before schedule) x. Any other document required in the BDS; and xi. Others considered necessary to strengthen the Bid submitted.

<table>
<tr><td>ITB 3.5.1</td><td>Add following:
The form of contract for the work“ Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur” will be a Lump Sum contract on EPC basis”.</td></tr>
<tr><td>ITB 3.5.2</td><td>The Prices quoted by the Bidder shall be fixed.</td></tr>
<tr><td>ITB 3.5.3</td><td>All variations in taxes and duties shall be borne as per relevant clause of the Section VI B: SCC</td></tr>
<tr><td>ITB 3.9.1</td><td>The Bid validity period shall be 120 (One Twenty days)days from deadline for submission of bids.</td></tr>
<tr><td>ITB 3.10.2</td><td>➢ EMD shall be @2% of estimated procurement cost i.e. Rs. 36.28 Lakhs for the bidder registered in appropriate equivalent class in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act or 0.5% of estimated procurement cost i.e. Rs. 9.07 Lakhs for the bidder registered as contractor for AA class in JDA.
➢ In case of JV please see table below
<table>
<tr><td>EMD 0.5% shall be applicable for</td><td>If both firm in JV are registered in AA class in JDA..</td></tr>
<tr><td>EMD 2.0% shall be applicable for</td><td>In the rest condition in JV, EMD shall be applicable 2.0% of estimated procurement cost i.e.
a) If one bidder registered in AA Class category in JDA, and other registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act.
b) If both bidder are registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act.</td></tr>
</table>
Bid Security deposit can be deposited either online or in the form of Bank Guarantee in favour of Secretary, JDA, Jaipur payable at Jaipur. The bidder will provide details of BGviz No., issue date, expiring date etc on online tendering system of JDA.
The original BG will be physically handed over in JDA as detailed below.
A copy of this BG is to be attached with the document during uploading.</td></tr>
<tr><td>ITB 3.10.3</td><td>The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Power of Attorney.</td></tr>
</table>

D. Submission and Opening of Bids

<table>
<tr><td>ITB 4.1.1</td><td>For bid submission purposes only, the Procuring Entity’s address is:
OFFICE OF THE EXECUTIVE ENGINEER(HQ)
Jaipur Development Authority, Room No 143, FF, Main Building, Ram Kishor Vyas Bhawan, Indira Circle, Jawahar Lal Nehru Marg, Jaipur-302004
Bidders shall submit their Bids electronically only.
The Bidders shall submit the Bid online with all pages numbered serially and by giving an index of submissions. Each page of the submission shall be initialled by the Authorised Representative of the Bidder as per the terms of the tender. The Bidder shall be responsible for documents accuracy and correctness as per the version uploaded by the Procuring Entity and shall ensure that there are no changes caused in the content of the downloaded document. The bidder shall follow the following instructions for online submission:</td></tr>
</table>

	• Bidder who wants to participate in bidding will have to procure digital certificate as per IT Act to sign their electronic bids. Offers which are not digitally signed will not be accepted. Bidder shall submit their offer in electronic format on above mentioned website after digitally signing the same. • Cost of bid document is **Rs. 1,000/-** should be deposited by online, whereas the Processing fee **Rs. 1,000/-** should be deposited online toMD, RISL, Jaipur payable at Jaipur. **Scanned copy of proof of payments shall be submitted with the technical bid**. • The Procuring Entity will not be responsible for any mistake occurred at the time of uploading of bid or thereafter. • If holiday is declared on submission & opening date of tender the scheduled activity will take place on next working day.
ITB 4.1.2	Bids are required to be submitted in Electronic Format, it shall be submitted on the e-procurement portal: http://eproc.rajasthan.gov.in
ITB 4.2.1	The Deadline for electronic Bid submission is **Date: .....** **Time: 06:00 PM**
ITB 4.4.1,4.4.5	The online Bid opening shall take place at: **OFFICE OF THE SUPERINTENDING ENGINEER-I** **Jaipur Development Authority, Room No JB-SF-208, Court Building, Ram Kishor Vyas Bhawan, Indira Circle, Jawahar Lal Nehru Marg, Jaipur-302004** The tendering process shall be conducted online only; DD/BG of Bid Security shall be submitted physically up to deadline described in tender document.
ITB 4.4.13,4.4.15	The Procuring Entity will open the Financial proposal as per e-tendering procedure.

E. Award of Contract

ITB 6.3.1	The period within which the Performance Security is to be submitted by the successful Bidder and the Contract Agreement is to be signed by him from the date of issue of Letter of Acceptance is 14 Days.
ITB 6.3.3	The procuring entity shall promptly return the bid security after the earliest of the following events, namely: 1. The expiry of validity of bid security 2. The execution of agreement for procurement/O&M and Security deposit is furnished by the successful bidder on part of execution/O&M 3. The cancellation of the procurement process; or 4. The withdrawal of bid prior to the deadline for presenting bids, unless the bidding documents stipulate that no such withdrawal is permitted.
ITB 6.4.1	**Security Deposit shall be solicited from the successful Bidder in accordance to 6.4 of ITB.**
ITB 6.4.3	(i) Security Deposit amounting to total 3% of contract value (Ref Clause 6.4.2 of ITB) shall be submitted in advance at the time of signing of agreement as per latest rules under RTPP act. Bank Guarantee encashable at Jaipur submitted against the performance guarantee, shall be unconditional and en-cashable/ invokable at Town for which tenders are invited or submitted at Jaipur. (ii) The successful Bidder at the time of signing of the Contract agreement, may submit option for deduction of Security Deposit from each running and final bill @ 3% of the amount of the bill.

7.1	First Appellate Authority shall be: Executive Committee JDA, Jaipur Second Appellate Authority shall be: A.C.S./P.S. UDH Jaipur

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR

Name of Project: - Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur

Section – III Evaluation and Qualification

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR

SCHEDULE AND SPECIFICATIONS

SCHEDULE – A: INFORMATION USEFUL FOR THE CONTRACTORS:

The bidder should see the site and fully understand the conditions of the site before tendering and include all leads, lift etc. The work shall be carried out in accordance with the MORTH/relevant I.S.code specification and relevant Manual and drawings given by consultant and to the entire satisfaction of the Engineer–In–Charge of the work.

Qualified personnel as required under the contractor enlistment rules duly approved by the Deptt. shall have to be engaged at site by the Contractor. The deptt. Reserves the right to engage such staff and recover the expenses from the contractor on such account in case of his failure to do so.

SCHEDULE – B: LIST OF THE DRAWING

The JDA has engaged a consultant M/s A. Mridul Architect for consultancy of proposed works. The bidder has to work as per the drawing & designs provided by the JDA's consultant. The bidder may submit any drawings required for ease of construction without violating the basic themes. The same will need approval by JDA before execution.

SCHEDULE - C: TEST OF THE MATERIALS:

The test of the materials and workmanship shall be conducted by the JDA staff as necessary. The bidder should also provide third party test result. The result of such tests should confirm to the standard laid down in the Indian standard MORTH/relevant I.S. code specification and relevant Manual.

SCHEDULE – D: SAMPLES OF THE MATERIALS:

The sample of the materials to be used by the contractor shall be deposited 15days In advance with the Engineer In charge and be got approval by him before use.

SCHEDULE - E: TIME OF COMPLETION:

The work should start within 15 days of issue of work order and complete within 5 Months.

Signature of the Contractor

With full Address, Mob No, Landline No & E-mail address

JAIPUR DEVELOPMENT AUTHORITY JAIPUR

Name of work: - Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur

Procedure:

Procedure for qualification would be as follow:

a. Two-envelope system would be adopted. Envelope-1 being for Technical Bid and Envelope - 2 being for Financial Bid. Each envelope would be sealed separately and super scribed as "Envelope-1 Technical Bid" and "Envelope-2 Financial Bid". Both envelopes would be placed in Third envelope duly sealed, bearing the name of work and the name of the bidding contractor. In this third envelope, of earnest money, GST certificate and copy of registration of contractor in required category should also be kept. (E-Bid procedure at http: //eproc.rajasthan.gov.in)

b. The technical bid will be opened only of those bidders whose proper Earnest money, GST certificate and copy of registration of contractor in required category are found to be in order.

c. The Technical Bid stage system (to envelope) would be opened on the date 16-08-2022.at 12.00Noon in the chamber of JB-SF-208, Ram Kishore Vyas Bhavan, Indira Circle, Jawahar Lal Nehru Marg, Jaipur – 302004 (Rajasthan).

d. The Financial Bid envelope would be opened only of those bidders who fulfill all the technical bid criteria.

1. Criteria:

(a) The bidder should have completed/executed at least one similar nature ***Interior works including Masonry, False Ceiling, Flooring Work, Electrical work (Fire Fighting, HVAC, forced ventilation etc.)*** in last seven (7) financial years (including current year, if opted by the bidder) of value not less than 50% of the estimated cost of the work (bid cost) i.e. 9.07 crore (updated to present price level)

the previous year's valuef shall be given weight age of 10% per year as follows :-

(a)	2022-2023 (Current Year)	1.00
(b)	2021-2022	1.00
(c)	2020-2021	1.10
(d)	20119-2020	1.21
(e)	2018-2019	1.33
(f)	2017-2018	1.46

(g)	2016-2017	1.60
(h)	2015-2016	1.76

Note:-

(i) The bidder should enclose supporting documents like photographs, copies of G-Schedule, Work Order, completion/execution certificate etc. in support of the work qualifying as similar nature work.

(ii) In case the bidder has executed/completed similar nature interior works as per clause 2(a) alongwith Civil work/Building work he must submit certificate issued by concerning authority having completed similar nature interior work as per clause 2A as per the qualifying amount and the component of similar nature interior work should not be less than 35% of total project cost.

(ii) The starting & completion date of the work is to be in between above said financial year. If no then maximum work (70%) is to be completed in above said financial year.

(iii) If bidder is submitted certificate having different components/nature of work then proper completion certificate of required similar nature building work***(Hotel 3 star and above, Airport Project, Institution Building, Shopping Mall, Office complex, Auditorium, Theatre, Sport Complexetc.)*** experience is to be enclosed.

(iv) Certificate issued by Govt. of India, State Govts., Union Territory, Govt. Undertakings, Autonomous Bodies, Private Hotel Groups 3 stars and above or private entity registered under companies act or relevant act shall only be considered.

2(b) The bidder should have a minimum 5 years of experience in ***Interior works including Masonry, False Ceiling, Flooring Work, Electrical work (Fire Fighting, HVAC, forced ventilation etc.)*** Both completed and ongoing projects shall be considered provided the bidder furnishes work orders and/ or completion certificates in support and verification of the information.

2(c) The bidder should have achieved an annual financial turnover of at least 60% of the Estimated Cost of the work (bid cost) i.e 10.89 crore in any one of last five years (including current year, if opted by the bidder) In case of JV, turn over of both the partners can be clubbed but of same financial year.

(i) The bidder should enclose certificate of Turn over from Chartered Accountant for last Five financial years & audited balance sheet of the year which is considered by the bidder in this criteria.

(ii) If current year or last year has been opted by bidder whose balance sheet is not submitted till the submission of bid then certificate from Chartered Accountant should be enclosed.

2(d) The bidder should have at least 25% of estimated cost i.e. Rs. 4.54 Crore as a working capital based on current assets and current liabilities (including the short term loan re-payment due in current years)

2(e) The bidder should submit certificate of Net Worth for the Financial Year 2021-22 (from latest audited balance sheet) and should be positive. (Certificate of Chartered Accountant showing calculation of Net Worth must be enclosed).

Note:-

(i) The bidder should enclose certificate of Chartered Accountant clearly mentioning that the working capital is as per formula given in tender document and clearly stating the individual components CA must also clearly mention that he has gone through the Revolving line of credit which is issued by scheduled Bank and Bank's commitment is project specific, assured and without any ambiguity and shall be available till final completion of project, otherwise bid shall not be considered For revolving line of credit bank's letter should be attached. The bank issuing resolving line of credit has to be scheduled Bank as per format, otherwise it shall not be considered.

.

2(f) Bid Capacity: Bidders who meet the minimum qualification criteria will be qualified only if available bid capacity is equal to or more than the total Bid value.

The available bid capacity will be calculated as under:
Bid Capacity = (A x N x 3 – B)

Where

A = Maximum value (at present price level) of Civil Engineering works executed in any one year during the last five financial years (updated to present price level) taking into account the completed as well as work in progress. However the bidder may opt current year in the five year assessment period.

N = Number of year prescribed for completion of the work for which bids are invited. In present case value of **N shall be 0.417**

B = Value at present price level of existing commitments and ongoing works to be executed during "N" period.

Note:-

(a) Certificate from Chartered Accountant should be enclosed by bidder clearly indicating maximum value of Civil Engineering works in one Financial Year.

(f) Litigation History: - Bidder should provide accurate information on any litigation or arbitration resulting from contracts completed or under execution by him over the last Ten years. The maximum value (updated at the present price level) of disputed amount claimed in the litigation /

arbitration resulting from contracts executed in last Ten years shall be deducted from the calculated Bid Capacity of the bidder. The details shall be furnished in Schedule VI.

Note :-

(i) The present price level for turnover, cost of completed work & disputed amount of similar nature***(Interior workswith Electrical works)***, the previous year's value shall be given weight age of 10% per year as follows :-

(a)	2022-2023 (Current Year)	1.00
(b)	2021-2022	1.00
(c)	2020-2021	1.10
(d)	2019-2020	1.21
(e)	2018-2019	1.33
(f)	2017-2018	1.46

2(g) The bidder should propose a panel of expert(s) as under:

i. Project lead with a recognized degree in B Tech from a reputed institute and at least Ten (10) years of total professional experience

ii. At least one expert each having a Degree/ Diploma from a reputed institute in the fields of:

(a) Interior Designer with experience of minimum 07 years .

(b) Two Nos. Civil Engg with experience of minimum 05 years;

(c) One Electrical Engineer with experience of minimum 05 years.

(d) Quality control Engg. With relevant qualification and with experience of minimum 05 years.

(e) Safety Engg. With relevant qualification and with experience of minimum 03 years.

The bidder should enclose duly attested CVs of the above experts.

3. Documentation :

The bidder should furnish the following documents along with the technical bid:

(a) Information regarding financial resources and capability in Schedule –I.

(b) Information regarding civil engineering works executed in the last seven years in Schedule–II

(c) Certificates from the concerned Engineer–In–Charge or Project head of PSU or private company in support and verification of the information furnished in Schedule–II .

(d) Information regarding details of maximum value of civil engineering works executed during the last five years taking into account the completed as well as works in progress in schedule – III.

(e) Information regarding existing commitments and ongoing works to be completed in schedule – IV.

(f) Information regarding details of litigation or arbitration contracts to be furnished in schedule – V.

(g) Calculation of Bid capacity in schedule – VI.

(h)Information regarding details of key personnel to be furnished in schedule – VII along with duly attested CVs.

(i) Details of machinery and equipment required to be deployed by the contractor in the execution of the work as per annexure-VIII on the judicial stamp as mentioned.

(j) Certificate required for net worth & working capital from charted accountant in describe format in bid.

(k) Affidavit of self-declaration as per Annexure I.

(l) Undertaking for not Blacklisted as per Annexure 2.

(m) Declaration by bidder under RTTP Act. (Annexure A, B, C, D)

4. Important:

(A) The bidder must ensure that all the information required in the Documents is furnished by him complete in all respects. He would not be allowed to withdraw any document, or to rectify any information furnished therein, after submitting the bid.

(B) The bidder should give an affidavit that the information furnished in schedule I, to VII is correct. If any information is found incorrect, the offer of the bidder shall be rejected and action be taken as per rules.

(C) Bidders must do paging of all enclosure of bid documents.

5. REJECTION OF BIDS:

THE DEPARTMENT RESERVES THE RIGHTS TO REJECT ANY BID OR TO DISQUALIFY ANY OR ALL THE BIDDERS, WITHOUT ASSIGNING ANY REASONS AT ANY STAGE.

i. If Bid is not accompanied with the requisite documents mentioned in Clauses 3 (a) to 3 (j) or is not in accordance with procedure specified in Para 1, or is not accompanied with earnest money & GST Certificate and registration of contractor, as per bid eligibility criteria,in required category it would be liable for rejection.

ii. Furnishing of incorrect or incomplete or concealment of any information required in the bid documents would render the bid liable for rejection.

iii. If all the copies enclosed in support and affidavit are not dulyself attested by Bidder himself then bid of the bidder is to be rejected.

6. IN CASE OF JOINT VENTURE:

In case the bidder comprises a joint venture or consortium, following requirements shall also be complied with:

a. In case the bidder comprises a joint venture or consortium, following requirements shall also be complied with: The JV will have to be formed before submission of the bid and total number of JV partners shall not exceed 2 (Two). They must designate lead partner duly authorized by all the members who will represent the J.V. Of the two partners one with higher stake will be the lead partner. For Evaluation & qualification criteria of 2(b) , 2(c) it should be in one financial year. For The lead partner shall be nominated as being partner-in-charge and this authorization shall be evidenced by submitting power of attorney signed by the legally authorized signatories of all the partners.

b. The partner-in- charge (or, the lead partner) shall be authorized to incur liabilities and to receive instructions on the behalf of the partners of the Joint Venture, whether jointly or severely, and entire execution of the contract (including payment) shall be carried out exclusively through the partner- in- charge.

c. The share of one of the two partners shall not be less than 26% and rest of the share shall be held by other partner (For example if share of one partner is 26% then for other partner it will be 74%.) The JDA will only send communication to the lead partner, which will be deemed to have been sent to all the J.V. partners. Similarly, any negotiation and / or agreement with the lead partner shall be deemed to have been concluded with all the J.V. partners. All the members of J.V. shall be bound by the said communication and all acts/ deeds of the lead member.

d. Any one of the two partners, alone should fulfill the Technical Criteria Similarly, any one of the two partners, alone should fulfill the Financial Criteria For rest of the eligibility criteria, qualifications of the two partners may be clubbed together.

e. The individual partner of J.V. alone or with other partners cannot participate in the same bid.

f. Bid capacity is to be calculated by clubbing turn over and work in hand of all the firms of joint venture.

g. Attested copy of the MoU / Agreement/ Power of attorney entered into by the joint venture / consortium members duly notarized shall be submitted along with the Technical Bid with intended percentage participation nomination of lead member and division of responsibility to clearly define the work of each member etc.

h. All the members of the joint venture/ consortium shall be jointly and severally liable for the execution of the Contract.

i. EMD shall be @2% of estimated procurement cost i.e. Rs. 36.28 Lakhs for the bidder registered in appropriate equivalent class in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act or 0.5% of estimated procurement cost i.e. Rs. 9.07 Lakhs for the bidder registered as contractor for AA class in JDA.

j. In case of JV please see table below;-

EMD 0.5% shall be applicable for	If both firm in JV are registered in AA class in JDA.
EMD 2.0% shall be applicable for	In the rest condition in JV, EMD shall be applicable 2.0% of estimated procurement cost i.e. a) If one bidder registered in AA Class category in JDA, and other registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act. b) If both bidder are registered in other departments/PSUs/ private or can be private entity registered under companies act or as applicable act.

k. It can be deposited in declaration format enclosed at Annexure …... In the event of default by any member of the joint venture/ consortium in the execution of his part of the contract, the partner-in-charge will have the authority to assign the work to any other party acceptable to the employer to ensure the execution of the part of contract.

l. In the event of default by any member of the joint venture/ consortium in the execution of his part of the contract, the partner-in-charge will have the authority to assign the work to any other party acceptable to the employer to ensure the execution of the part of contract.

m. If initially the bid has purchased and submitted by the any partner or by the JV firm, in case JV bid accepted, the work order will be issued in favour of name of JV and the bidder will submit details of JV bank account to which payment is to be deposited by JDA.

n. The experience certificate will be issued as per percentage of the shareholders defined in JV agreement of the two partners.

EXECUTIVE ENGINEER (HQ)
JDA, JAIPUR

Annexure: 5

Bid Evaluation Sheet

Name of Work: - Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur.

S. No.	Criteria	Required Qualification	Bidders qualification	Bidders uploaded document Page No. in support of qualification.	Remark
1	2	3	4	5	6
1	Registration Certificate - As per Clause 1e of Special Conditions of Contract.	Bidder should be registered in AA class category in JDA or equivalent in other departments /PSUs/ private or may be a private entity registered under companies act or as applicable act			
2	GST Certificate - As per Special Conditions of document	-			
3	Fee Payment Details (Please enclose copy of electronic receipt)	-			
(i)	Cost of Bid	Rs. 1,000/-			
(ii)	Bid Processing Fee	Rs. 1,000/-			
(iii)	Bid Declaration	➢ All the eligible bidders should submit Bid			

		Security Deposit as @ 2% of estimated procurement cost i.e 36.28 lakhs for the bidders registered in appropriate equivalent class in other department/private entity 0.5% of estimated procurement cost i.e 9.07 lakhs for the bidders registered as contractor for 'AA' class in JDA ➢ Bid Security deposit can be deposited either online or in the form of Bank Guarantee in favour of Secretary, JDA, Jaipur payable at Jaipur. The bidder will provide details of BGviz No., issue date, expiring date etc on online tendering system of JDA. ➢ The original BG will be physically handed over in			

		JDA before the date of opening of technical bid. A copy of this BG is to be attached with the document during uploading.			
4	2(a) The bidder should have completed/executed at least one similar nature ***Interior works including Masonry, False Ceiling, Flooring Work, Electrical work (Fire Fighting, HVAC, forced ventilation etc.).*** in last seven (7) financial years (including current year, if opted by the bidder) of value not less than 50% of the estimated cost of work i.e 9.07 crore (updated to present price level				
A	Value of work executed	-			
B	Financial year	-			
5	2(b) The bidder should have a minimum 5 years of experience in ***Interior works including False Ceiling, wall panelling, Acoustic Work, Flooring Work, Electrical work (Fire Fighting, HVAC, forced ventilation etc***. Both completed and ongoing projects shall be considered.				
6	2(c) The bidder should have achieved an annual financial turnover of at least 60% of the Estimated Cost of the				

	work (bid cost) i.e 10.89 crore in any one of last five years (including current year, if opted by the bidder).				
A	Annual Turn over	-			
B	Financial Year	-			
7	2(d) The bidder should have at least 25% of estimated cost i.e. Rs. 4.54 Crore as a working capital based on current assets and current liabilities (including the short term loan re-payment due in current years)				
8	2(e) The bidder should submit certificate of Net Worth for the Financial Year 2021-22 (from latest audited balance sheet) and should be positive. (Certificate of Chartered Accountant showing calculation of Net Worth must be enclosed).				
9	2(f) Bid Capacity = (A x N x 3 - B) A = Maximum value (at present price level) of civil engineering works. N = Number of years prescribed for completion of the work for which bids are	-			

	invited. In present case value of **N shall be 0.417** B = Value at present price level of existing commitments and ongoing works to be executed during "N" period.				
10	2(g) The bidder should propose a panel of expert(s) as under: i. Project lead with a recognized degree in B Tech from a reputed institute and at least Ten (10) years of total professional experience ii. At least one expert each having a Degree/ Diploma from a reputed institute in the fields of: (a) Interior Designer with experience of minimum 07 years . (b) Two Nos. Civil Engg with experience of minimum 05 years; (c) Electrical Engineer with experience of minimum 05 years. (d) Quality control Engg. With relevant qualification and with experience of minimum 05 years. (e) Safety Engg. With relevant qualification and with experience of minimum				

	03 years. The bidder should enclose duly attested CVs of the above experts.				
11	Details of machinery and equipment required to be deployed by the contractor in the execution of the work as per annexure-VIII on the judicial stamp as mentioned				
12	Litigation History Schedule-VI				
13	Affidavit for Correctness of documents (Annexure 1)	-			
14	Declaration by bidder under RTTP Act. (Annexure A, B, C, D)	-			
15	Undertaking for not Blacklisted (Annexure 2)				
16	Duly filled Schedules as enclosed				

Signature of Bidder with Seal

Schedule – I

FINANCIAL RESOURCES AND CAPABILITY

[Reference clause 3 (a)]

1. Name of Bidder: - M/s.....

2. Total financial turnover achieved by the bidder in the last Five financial years:

S.N.	Year	Turnover
(a)	2022-2023(Current Year)	
(b)	2021-2022	
(c)	2020-2021	
(d)	2019-2020	
(e)	208-2019	
(f)	2017-2018	

Note: Balance Sheets and Profit & Loss Accounts is to be enclosed by the bidder which is considered by him as per criteria 2 (a).

3. Total financial Turnover projected in the current financial year
4. Has the bidder ever been debarred from bidding for Central Government / State Government / any Government undertaking?
   Yes / No, if yes give details.
5. Has bidder ever been declared insolvent?
   Yes/No, if yes give details.
6. Name(s) and Address of Branch/(s) for bidder's Bankers.

I/We hereby certify that the above information is correct to the best of my/our knowledge and belief.

Signature of Bidder

Date : **(With Seal wherever applicable)**

SCHEDULE II

Reference Clause 3 (b)

DETAILS OF INTERIOR WORKS EXECUTED IN DURING THE LAST FIVEFINANCIAL YEARS TAKING INTO ACCOUNT THE COMPLETED AS WELL AS WORKS IN PROGRESS

Sr. No.	Name of the work	Name of the client	Location of work	Nature of work	Cost of work as per the work order (inclusive of taxes)	Stipulated date of completion	Actual Cost of work (if completed)	Actual date of completion	Status of work

Note: Certificate of completion (duly signed and stamped by a competent authority) for each of the completed works, and work orders (duly signed and stamped by a competent authority) for each of the ongoing works to be submitted by the bidder.

Date:

Signature of Bidder
(With seal wherever applicable)

SCHEDULE – III

Reference Clause 3 (d)

DETAILS OF MAXIMUM VALUE OF CIVIL ENGINEERING WORKS EXECUTED IN ANY ONE YEAR DURING THE LAST FIVEFINANCIAL YEARS TAKING INTO ACCOUNT THE COMPLETED AS WELL AS WORKS IN PROGRESS

S. N.	Name of Works (with agreement No. & Date)	Client	Place (district / state)	Financial Year	Cost of Work as per Work Order	Stipulated date of commencement	Stipulated date of completion	Value of work done during the year	Page No.

Date: Signature of Bidder

(With seal)

SCHEDULE - IV

[Reference Clause 3(e)]

DETAILS OF EXISTING COMMITMENTS & ON GOING WORKS TO BE COMPLETED

S. No	Name of Works (with agreement No. & Date)	Client	Cost of Work as per Work Order	Stipulated date of commencement	Stipulated date of completion	Value of balance work on date of bid	Likely date of completion of balance work	Page No.

Date: Signature of Bidder

(With seal)

SCHEDULE - V

[Reference Clause 3(f)]
DETAILS OF LITIGATION OR ARBITRATION CONTRACTS

S. No.	Name of Works (with agreement No. & Date)	Client	Work Order Amount	Disputed Amount Claimed in Litigation / Arbitration	Date of Raising Disputed Amount	Actual Award Amount, if the case is Decided	Cause of Litigation & matter in Dispute

Date: Signature of Bidder

(With seal)

SCHEDULE – VI

[Reference clause 3(g)]

BID CAPACITY

Name of Bidder : ----------

1	A = Maximum value of Civil engineering works executed in any one year during the last five financial years (updated to present price level)	……..Lacs.	Certified details enclosed at Page No. ……
2	N = Number of years prescribed for completion of the work for which bids area invited	0.417	
3	B = Value at present price level of existing commitments and ongoing works to be completed during next N period	……..Lacs.	Certified details enclosed at Page No. ……

BID CAPACITY = A X N X 3-B

= ……..Lacs.

Signature of Bidder

SCHEDULE VII

DETAILS OF KEY PERSONNEL

Construction of other than structure part viz masonry, finishing work, electrical, mechanical engineering building, interior work, landscaping and outer development works at Mahatma Gandhi Museum at Central Park, Jaipur

Name of Bidder…….

S.No.	Requirement of Technical Staff		Experience/Qualification	
	Designation	**Strength**	**Minimum Experience (Years)**	**Qualification**
1.	Project Manager	1 No.	10 yr (having experience of one similar nature of work)	B Tech or Equivalent
2.	Interior Designer	1 No.	7 Yr (having experience of one similar nature of work)	Relevent Qualification
3.	Project / site Engineer (civil)	2 No.	5 Yr.	Civil Graduate Engineer or Diploma Engineer
4	Project / site Engineer (electrical)	1 No.	5 Yr.	Electrical Graduate Engineer or Diploma Engineer
5.	Quality Control Engineer	1 No.	5 Yr.	Civil Graduate Engineer or Diploma Engineer
6	Safety Engineer	1 Nos	3Yr	Graduate

AffidavitonNonJudicialStampPaperofRs.100/- begiveninsupportoftheaboveinformation.

Signature of Bidder

ANNEXURE- I

(Reference Clause 3 (i)

To be given on Non-Judicial stamp Paper of Rs. 50/- only, duly Self Attested

SELF DECLARATION

Signed Photograph of Applicant

I/We…….. Proprietor/ Partner/ Authorized signatory of M/s …… under take the oath that the information furnished by me/us in schedule I to VI of the Technical Bid for**:** "**Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur"** is correct to the best of my/our knowledge**.** If any information is found to be incorrect JDA has right to reject the Bid and to take action against me/us as per rules.

Date: Proprietor/ Partner/ Authorized signatory

M/s ……..……

(With seal)

Note:- The applicant has to enclosed a self-attested photo identity card with above affidavit.

ANNEXURE_2

UNDERTAKING FOR NOT BLACKLISTED
(On a Non Judicial Stamp of Rs 50/-)

I/We……S/O Shri……Age…….Year…… Resident of…….....……. District……..State……Proprietor/ Partner/ Authorized signatory of M/s …… hereby declare and undertake as under.

1. I/We declare that _____ in capacity as _____ of _____ has not been charged with any prohibitory and /or penal action such as banning(for specific time or permanent)/de-registration or any other action under the law by any Government and/or Semi Government and/or Government undertaking.
2. I/We declare that I/We have perused and examined the tender document including addendum, condition of contract, specifications, drawings, bill of quantity etc. forming part of tender and accordingly, I/We submit my/our offer to execute the work as per tender documents at the rates quoted by me in capacity as _____ of _____
3. I/We declare that my/our firm have not been Black listed/debarred by any institution of Govt./Semi Govt. /Municipalities etc. for failure to pay any dues or for unsatisfactory performance.
4. I/We declare that my/our Firm has not been adjudged by any Court as insolvent, not Convicted under any law for any offence involving moral turpitude or any criminal activity.
5. I/We declare that the information provided by me/us is true and if any given time it is observed that any of the statement made above is in violation of said declaration, I/We are fully aware that contract will be terminated with immediate effect and Security Deposit/EMD shall be forfeited my/our firm shall be Black Listed or debarred from future tender of Jaipur Development Authority.
6. I/We declare that the information furnished by me/us in Technical Bid for "Construction of other than structure part viz masonry, finishing work, electrical, mechanical engineering building, interior work, landscaping and outer development works at Mahatma Gandhi Museum at Central Park, Jaipur." is correct to the best of my/our knowledge and belief and nothing has been concealed therein.
7. I/We are well aware of the fact that if the information given by me is proved false/not true, I/We shall have to face the punishment as per the law. Also all the benefits availed by me shall be summarily withdrawn and JDA has right to reject the Bid and to take action against me/us as per rules.

Enclose I.D. Proof with self-declaration/undertaking.

.....
Proprietor/ Partner/ Authorized signatory
M/s …….....
Stamp and Signature of Authorized Signatory

Note:
1. The undertaking shall be signed by authorized signatory of the bidder.

GENERAL INFORMATION OF TENDERER

ANNEXURE_3

A. BIDDER INFORMATION SHEET		
BIDDER s Legal Name	Sole Proprietorship Firm/Partnership Firm /Private Limited Company/Public Limited Company/ Joint Venture/Consortium	
In case of single entity, ownership & control of the Tenderer		
In case of JV/Consortium, Legal name of each partner with percentage participation (also Provide information of each member in separate sheet (page 2 of 2)	Legal Name of JV/Consortium member	% participation
Lead member of JV/Consortium,		
Bidder's actual or intended country of constitution		
Bidder's legal address, telephone numbers, fax numbers, e-mail address.		
Bidder's authorized representative or person-in-charge in case of JV/Consortium, (name, designation address)		

SIGNATURE OF

AUTHORIZED SIGNATORY

ON BEHALF OF BIDDER

ANNEXURE 3

B. JV/CONSORTIUM MEMBER INFORMATION	
JV/Consortium Member of Legal Name	
Legal status of the JV/Consortium Member	Sole Proprietorship Firm/Partnership Firm /Private Limited Company/Public Limited Company
Ownership & control of the JV/Consortium Member	
JV/Consortium Member country of constitution	
JV/Consortium Member of legal address, telephone numbers, fax numbers, e-mail address)	
JV/Consortium Member's authorized representative (name, designation address)	

ATTACH ATTESTED COPIES OF FOLLOWING ORIGINAL DOCUMENTS

- Document in support of legal status and ownership & control of the bidder or each member in case of JV/Consortium (undertaking for sole proprietorship/ partnership deed/ Memorandum & Articles of Association
- In case JV/Consortium, submit MoU/Agreement (duly notarized) entered into by the joint venture/consortium members, containing intended percentage participation, nomination of Lead Member and division of responsibility to clearly define the work of each member etc.
- Authorization/POA in favour of authorized representative of tenderer to represent the bidder and also in favour of authorized representative of each member in case of JV/Consortium

SIGNATURE OF AUTHORIZED SIGNATORY

ON BEHALF OF BIDDER

SECTION-IV

PROCURING ENTITY'S REQUIREMENTS

5.1 General

Name of Project – **Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur**

5.1.1 Project Background

- The project site is located approx 3.00 km from Jaipur Railway Station and approx. 8.00 km from Jaipur Airport at Central Park, Jaipur.
- The work is to be executed on Engineering, Procurement and Construction(EPC) Mode basis. In EPC Mode, the procurements and construction including interior andfurnishing shall be done by EPC contractor as per the drawings provided by the consultant appointed for this work by the department. Necessary approvals will be given bydepartment.
- ***The total plot area is about 14564.00 (3975.00+5541.20+4755.50+291.50)sqm.*** Contractor shall be required to do all civil work including interior and furnishing works, MEP, terrace floor, anti termite treatment, lift, furniture etc. as per drawings provided by the consultant.
- The structural work of the building excluding brick work has been completed. The bidder should complete all missing civil works in premises in order to make the building fully functional in all respect. Photographs of executed structure work are enclosed for reference.
- JDA has engaged a consultant M/s A. Mridul Architect for consultancy for proposed interior works. The bidder has to work as per the drawing & designs provided by the JDA's consultant. The bidder may submit any drawings required for ease of construction without violating the basic themes. The same will need approval by JDA as per advise of consultant before execution.
- The work of Gandhi Darshan Museum is to be executed in phases for which the bidder has to work in coordination with agencies executing the works of other phases for its time bound completion.

5.2 In the building following major facilities are provided

Area Details:(Only for Reference purpose)

FLOOR	**FACILITIES**
BASEMENT	
A	Exhibition Area
B	Curation room
C	Services
D	Toilets
E	Court Areas
LOWER GROUND FLOOR	

A	Exhibition Area
B	Restaurant & Kitchen
C	Curation room
D	Services
E	Toilets
F	Court Areas
UPPER GROUND FLOOR	
A	Admin block (+0.90m lvl)
B	Block-A (+2.40m lvl): lobby & kiosk
C	Block-B (+3.00m lvl):lobby, varandah, rooms, hall
D	Block-C (+3.00m lvl): lobby & halls
E	Block-D (+4.00m lvl): halls, rooms, lobby, corridors
F	Prayer hall
G	Court area
H	Toilets and service rooms
FIRST FLOOR	
Common Areas like staircase, lift, ramps & corridors etc.	

5.2 Scope of work

i) The bidder should complete all missing civil works in premises in order to make the building fully functional in all respect.

ii) The bidder should complete the Interior works with Design & Execution of Electric Installation work as per the attached drawings, design & conceptual drawing (conceptual drawing may also be seen by the bidder in Executive Engineer (HQ) Office at JDA.

iii) Major Interiorworks :-

1. Civil Works like :
   a) Masonry walls [AAC blocks, exposed sandstone (Teja stone from Natata, Saiwal, Jaipur/Siwar Pink sand stone), rammed earth walls, CSEB (compacted stabilized earth blocks], toilet partitions (Greenlam or equi)
   b) Flooring (Garda Stone from Buddhpura (Polished/ flamed/ leatheredfinish), Granite, Marble, Vitrified Tiles, VDC etc.)
   c) Wall Cladding in toilets (tiles)
   d) False Ceilings (Fire resistant in restaurant, cement sheets in toilets)
   e) Gysem Plaster (internal areas except toilets), cement plaster (toilets), pointing (deep groove) on stone walls
   f) Entrance gate as per approved design
   g) Doors
   h) Aluminium/UPVC work, glazing work
   i) Complete Railing work (staircase, cut outs etc) in all respect
   j) Plaster of Paris work
   k) Painting work
   l) Furniture of approved makes (fixed and moveable)
   m) Toilets to be finished and made operational
   n) Steel Supporting System (For all services)
   o) Waterproofing of toilets and courts

p) Roof treatment, Anti termite Treatment, Plinth protection at courtyards, Filling of good earth (cinder fill)
q) Miscellaneous civil works i.e toe walls, counters in kitchen/toilets, rebarring/making holes as per requirement etc.
r) Arrange conferences, site visits, inaugural and handing over functions, holding meetings etc

2. Complete design & implementation of Electric & Mechanical works like :
   a) Heat Ventilation and Air Conditioning System (HVAC System)
   b) Internal Electric wiring and fixtures work
   c) Force Ventilation System
   d) Fire Fighting Work
   e) Elevator works
   f) Miscellaneous works if any

iv) Site office & Laboratory – Well-furnished site office space with computers / printers shall be provided also shall establish the testing laboratory with desired number of testing equipment's for carrying out various test on site as per relevant codes.

v) Safety measures – shall adhere all safety measures and safety codes to achieve zero fatal injury. If contractor fail to adhere safety norms, Engineer-in-charge shall impose a penalty of maximum 10% amount of contract value which shall never be refunded in any case.

vi) The contractor shall submit original equipment manufacturer's certificate for all major items with five years warranty.

vii) All Civil works (masonary, wall & ceiling plaster, putty, POP, paint etc) shall be done by bidder as per site requirement. No additional payment shall be made for the same.

viii) Open to sky area shall be covered as per the direction of Engineer In-Charge.

ix) After completion of interior works all sanitary and water supply lines should be in working condition. All liabities regarding the same shall be bear by bidder at no cost.

x) All the equipment should have factory inspection by JDA's engineer in charge as per prevailing IS code, prior to dispatch the material. All the expenses occurred during the inspection will be borne by the contractor.

xi) The successful bidder shall submit the report to Executive Engineer (HQ), JDA every fortnightly regarding progress of work.

xii) Drawing out of water accumulation from basement or any area of site will be in bidder's scope of work.

xiii) In case of failure of successful bidder to perform his obligation as specified in the scope of work, JDA shall be free to carry out the work and shall recover two times of actual expenditure occurred on the work from his performance security/security deposit.

xiv) Bidder should complete all required missing civil/electrical work to complete the building in all respect.

xv) Any opening/cut outs in the building need to be packed with RCC/Masonary work if required as per the Architectural requirement shall be in the bidders scope. No additional payment shall be made for the same.

Special Conditions for ElectricalWork :

1. Bidder should have Local OEM center should in working since five year
2. All electrical works is under five year warrantee period.
3. Tri party agreement should be executed by bidder for warrantee period of electrical items

4. It is liability of contractor to maintain all electrical equipment for five year after completion of the work.
5. All electrical material should be atleast of group first item of JDA BSR 2016 /PWD BSR 2016.
6. Electrical work is SITC work i.e. supply, installation, testing and commissioning as per specifications and latest ISI standards.
7. The make of all electrical items will be decided by Engineer-In-Charge.
8. During the execution of the work, if any drawing/specifications required same will be provided by the appointed consultant/OIC of work.

Contractor Obligation

A. While undertaking development of the Project, the Successful Bidder shall adhere to the latest amended National Building Code of India, other relevant IS Codes and practices, Development Control Rules, FSI Limits, statutory requirements, laws of land, the principles of good industry practices and any other norms as applicable from time to time.

B. The concrete grade as well as flooring will be as per the relevant Bureau of Indian Standard and IRC standards. All the drawings will be submitted to the Authority and after their approval only the construction activity will start.

C. On completion of the work, the place will be handed over to JDA. However, the contractor will be responsible for maintaining the asset for 5 years of Defect Liability Period, during which period, the contractor will be liable to rectify/amend any defect, including those for civil works, mechanical/electrical and instrumentation works, sensors and will change all the equipment or parts there of promptly and without any additional cost.

D. Water and Electricity charges from start date to final handing-over of site are in bidder's scope.

E. The Agency is required to complete the project on EPC basis with in controlled civil norms as mentioned in the Scope of Work, Technical Specifications & Architectural Drawings including development of entire site area up to & including the boundary wall. The scope of work is to be carried out complete in all respect including furnishing and services. Rates quoted by the Agency shall be considered for entire scope of work which includes all activities/ work starting from the given concept to completion till handing over of completed project in functional state from all perspective. The quoted amount is inclusive of defect liabilities period of 5 years for civil works and services which includes electrical installations, plumbing, fire fighting, lifts & its furnishing, etc. after acceptance of project as complete and functional, by the competent authority any damagein services would be borne by the Agency till the defect liability. It shall be deemed that the Agency has satisfied himself with the nature and location of the work, general and local conditions and particularly tho sepertaining to transport including restriction of movement of traffic / vehiclese tc., handling, availability and storage of materials,availability of labour, weather conditions at site and general ground/ sub soil conditions. Agency is expected to quote their rates accordingly and nothing extra shall be payable for any reason/ swhat so ever it may be.

F. JDA shall bear no responsibility for the lack of such knowledge and also the consequences there of to the Agency. The information and site data shown in the drawings and mentioned in the tender documents are furnished for general information and guidance only. The JDA in no case shall be held responsible for the accuracy there of or/ and deductions, interpretations or conclusions drawn there from by the Agency and no claim shall be entertained whatsoever on this account; if the site conditions/ information is different or otherwise incorrect. It will be presumed that the Agency has satisfied himself for all possible contingencies, situations, bottle necks and acts of coordination which may be required between the different agencies.

Neither any hindrance shall be entertained because of the se constraints if so occurs at any stage.

The Agency is required to appoint execution team on site for pre and post construction works.

RequirementofTechnicalRepresentative(s)andRecoveryRates:
Applicable only for pre-construction and construction Phase work.

S.No.	Requirement of Technical Staff		Experience/Qualification		Rate of recovery per person if not appointed
	Designation	**Strength**	**Minimum Experience (Years)**	**Qualification**	
1.	Project Manager	1 No.	15 yr (having experience of one similar nature of work)	B Tech or Equivalent	Rs. 100000/- per month
2.	Interior Designer	1 No.	7 Yr (having experience of one similar nature of work)	Relevent Qualification	Rs. 60000/- per month
3.	Project / site Engineer	2 No.	5 Yr.	Civil Graduate Engineer or Diploma Engineer	Rs. 50000/- per month per person
4.	Quality Control Engineer	1 No.	5 Yr.	Civil Graduate Engineer or Diploma Engineer	Rs. 50000/- per month
5	Safety Engineer	1 Nos	3Yr	Graduate	Rs. 50000/- per month

Note:

1. The above given strength shall be required to be deployed as and whennecessityarisesatsite or sodirected byJDA.

Other Conditions:

1. Contractor have to establish material testing labs and keep construction equipment as per requirement of the work and direction of Engineer-in charge.
2. The Agency shall hand over the assets after completion of work with as built drawings, services route plans, Maintenance manuals, Warrantees/ Guarantees or any other document required by the JDA for maintaining these establishments.
3. Electrical & Mechanical Works: Details ofE & M works are given in of the tender document.

4. Samples of the materials of approved make or otherwise shall be got approved from the JDA before use in the work.

5. Shifting /Removal of Services and Statutory Approvals: Contractor shall take all necessary measures required to be taken to remove any live or dead service lines running through the plot area, cutting/shifting of tress etc, without any extracost. After completionof the work and commissioning of building(s) along with services, he shall get completion certificate from local body, NOC from fire department and any other statutory approval related to building for handing over the assets. JDA and client i.e. JDA shall extent necessary support, as per statutory requirements, to the contractor for these approvals.

6. Contractor shall submit item wise detailed measurements, for record and other purposes. After completion of the work contractor shall submit as built drawings of all civil , electrical and mechanical services in Auto CAD including five sets of coloured drawings on A0/A1 size.

SECTION-IV

PROCURING ENTITY'S REQUIREMENTS

Additional conditions of civil works

The work in general shall be carried out in accordance with the specifications mentioned with this tender document.

Specifications and Conditions, Additional Conditions mentioned in this document.

JDA Specifications for civil and electrical as applicable.

Indian Standard Specifications of BIS including modifications / amendments Relevant Sections of National Building Code 2016 with up-to-date amendments Sound engineering practice as per directions of the JDA.

Agency(s) shall provide permanent benchmarks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of the work. All such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings.

The Agency (s) should engage approved, licensed plumbers for the work and get the materials (fixtures/fittings) tested, by the municipal body/corporation authorities wherever required at his own cost. The Agency(s) shall submit forthe approval of the JDA, the name of the plumbing Agency proposed to be engaged by him.

The agency shall give performance test of the entire installation(s) as per the specifications in the presence of the JDA or his authorized representative before the work is finally accepted and nothing extra what-so-ever shall be payable to the agency for the test.

Thework shall be carried out in accordance with the Architectural drawings and structural drawings, interior and finishing drawings provided by consultant and approved by the JDA.

Before commencement of any item of work the agency shall correlate all the relevant drawings, and specifications etc. and satisfy himself that the information available is complete and unambiguous. The agency alone shall be responsible for any loss or damage occurring by the commencement of work base don any erroneous and or in complete in formation and no claim what so ever shall be entertained on this account.

The agency shall conduct his work, so as not to interfere with or hinder the progress or completion of the work being performed by other agency(s) or by the JDA and shall as far as possible arrange his work and shall place and dispose of the materials being used orremoved,so as notto interferewiththeoperationsofotheragencysimultaneouslyworkingorheshallarrange his work with that of the others in an acceptable and coordinatedmanner and shall perform it in proper sequence to the complete satisfaction ofothers.

Iftheworkiscarriedoutinmorethanoneshiftorduringnight,noclaimonthis account shall be entertained. The agency must take permission from thepoliceauthoritiesetc.ifrequiredforworkduringnighthours,noclaim/hindrance on this account shall be considered if work is not allowed duringnighttime.

Theagencyshallberesponsibleforthewatchandward/guardofthebuildings safety, fittings and fixtures provided by him against pilferage andbreakage during the period of installations and thereafter till the building isphysically handed over to the department. No extra payment shall be made onthis account.

Sample of building materials, fittings and other articles required for executionof work shall be got approved from the JDA before use in the work. Thequality of samples brought by the agency shall be judged by standards laiddownintherelevantJDA/BISspecifications.Allmaterialsandarticlesbroughtbytheagencytoth esiteforuseshallconformtothesamplesapprovedbythe JDAwhichshallbepreservedtillthecompletion ofthework.

BIS marked materials except otherwise specified shall be subjected to qualitytest at the discretion of the JDA besides testing of other materials as per thespecifications described for

the item/material. Wherever BIS marked materialsare brought to the site of work, the agency shall, if required, by the JDA,furnish manufacturer‘s test certificate or test certificate from approved testinglaboratorytoestablishthatthematerial/procuredbytheagencyforincorporation in the work satisfies the provisions of specifications / BIS codesrelevanttothematerial and /ortheworkdone.

The agency shall procure the required materials in advance so that there issufficient time to testing of the materials and clearance of the same before usein the work. The agency shall provide at his own cost suitable weighing andmeasuring arrangements at site for checking the weight / dimensions as maybenecessaryforexecution ofwork.

Regardingtestingofcivil&electricalmaterials,thetestingofmaterialsshallbeconductedinGovt.Laboratory/Govt.colleges/IITs/NITsorfromthelaboratory approved by JDA. The charges of testing of materials in approvedlaboratoryshall be bornebytheagency.

Agencyshallsubmitminimum―QualityAssurance‖planwithin45daysafter award ofworkwhich shallbe consistingof:

Lot size, number of required tests and frequency of testing. While decidingthese criteria JDA Specifications & Provisions of BIS Code and StandardPractices may be referred. Volume of work, Practical Difficulties and SiteConditions etc. may also be kept in view. The lot size, number of tests andfrequenciesoftestingcanbealteredormodifiedbytheJDAfromtheprescribedlimits.

Itshould clearly indicatethe Machinery and other Tool & Plantsrequired tobe deployed at site by the agency. Entire Machinery and T&P may not berequired at the start of work, therefore, a proper time schedule by which eachMachinery&T&Pistobebroughtatsiteshouldalsobeindicated.

Receiptof Material, testingof thesame&Maintenanceof RegisterofTests.

AlltheregistersoftestscarriedoutatConstructionSiteorinoutsidelaboratories shall be maintained by the agency. Which may be inspected byJDAorhis/herdesigneeatanypointof time.

The Agency shall allow access to Third Party Quality Assurance Agency e(TPQAA) engaged by JDA to have a control on quality and methodology ofexecution. At least 25% of Samples of materials including Cement ConcreteCubes shall be taken jointly by Agency and TPQAA / JDA/quality controlwingofJDAorhisauthorizedrepresentative.Allarrangementsfortransportingandgetting themtestedshallbemadebytheAgency.

All the test in field lab setup at Construction Site shall be carried out by theQualitycontrolteamtobeengagedbytheAgencywhichcanbewitnessedby JDA or his/her designee. A daily report of Tests to be conducted on a dayshallbe submittedtoJDA orhis/herdesignee.

All the entries in the registers will be made by the designated EngineeringStaffoftheAgency.

Agencyshallberesponsiblefor safecustodyofallthetestregisters.

SubmissionofcopyofalltestregistersMaterialatSiteRegisterandhindrance register along with each alternate Running Account Bill and FinalBillshall bemandatory.

All material received at site shall be entered in MAS Register and copy ofSupply order, MTC & Bill-invoice shall be maintained in order. The MASRegisters including Cement and Steel Registers shall be maintained by aqualifiedstaffofAgencywhichmaybeinspectedbyJDAorhis/herdesignee at any time. The daily report of receipt of material shall be sent toJDA or his/her designee.

Theagencyshallsubmita'Methodsstatement'foreachimportantactivityfor the approval of the JDA soon after the award ofwork to him. The'Methods statement' is a statement by which the construction procedures forany activity of construction are formulated and stated in chronological order.The'Methodsstatement',shouldhaveadescriptionoftheitemwithelaborate

procedures in steps to implement the same, the specifications ofthe materials involved, their testing and acceptance criteria, equipment to beused,Precautionstobetaken,stepsofmeasurementetc.

As and when any important item is taken up for execution, the Agency shallsubmitthespecificationsanddevelopachecklistandPourcard.Thissample checklist should be got approved from the JDA and should be usedat site. This check list should be shown to the JDA or his/her designeeduring inspection. This procedure is to be followed for all hiddenitems,CC/RCC work, Steel-reinforcement, shuttering, cast-in-situ mosaic flooring,doors&windows,plumbing,includingwatersupplypipelines,rooftreatment,earthfillinge tc.

The agency shall render all help and assistance in documenting the totalsequenceofthisprojectbywayofphotography,slides,audio-videorecordingetc.nothingextrashallbepayabletotheagencyonthisaccount.

5.1 DETAILED TECHNICAL SPECIFICATIONS FOR REFERENCE PURPOSE :

(INTERIOR WORKS_CIVIL)

	MASONRY WORKS
	Internal Masonry
1	Providing & Laying autoclave aerated blocks masonry with AAC Blocks of Grade-I Conforming to IS:2185 Part:III in superstructure above plinth level with cement mortar 1:4 (1 cement: 4 coarse sand) .The rates includes providing and placing in position 2 Nos. 6 mm dia M.S. bars at evry third course of masonary.
A	625x200x100 mm thk. AAC Block Masonry Partition Walls
B	625x200x200 mm thk. AAC BlockMasonry Walls
	External Masonry
2	Exposed Random Rubble stone masonary (Teja Stone from Natata, Saiwal, Jaipur/ Siwar Pink sandstone)for superstructure above plinth level one storey height above 30 Cm. thick wall As per Detail to be provided by JDA
	375mm thk. Exposed Sandstaone Masonry Walls
3	Installation (Delivery & Compaction) of Stabilized Rammed Earth (SRE) walls by blending aggregates, sand and cement stabilisers with enough water and waterproofing admixtures to achieve a damp, optimally compactable compound under guidance of specialized vendor. Water based material such as acrylics, latexes, PVA or other polymer emulsions to be used as materials for internal dust sealing with adequet dilution as per instructons As per Detail to be provided by JDA
	450mm thk. Rammed Earth Walls Stabilized Rammed Earth, CSEB (Compacted Stabilized Earth Blocks),
	PARTITION WALLS
4	Installation (Providing and fixing) of Modular Toilet Partitions Cubicles (Greenlam or equi.) with required Hardware accessories, complete in all manner. Vibrance-Serene-Suede-1995 As per Detail to be provided by JDA (Thickness 12mm, Door 600x1785, Divider Height 1820, Overall Height 1995, Depth -NA-, Width 1267)
	Modular Toilet Partitions (Greenlam or equi.)
	FLOORING WORKS
5	Providing and fixing First quality with uniform texture Stone On floor 15-18 mm thick over 30mm (Av.) thick base of CM 1:4 (1 cement : 4 coarse sand) jointing with white cement mortar 1:2 (1 white cement : 2 marble dust) & In Skirting shall be fixed to the wall surface using 1:3 cement sand mortar with a top layer of white cement and to wood ply surfaces using wood to stone adhesive with pigment to match the shade of the stone slab including grinding, rubbing and polishing and moulding as per design and drawing complete.

A	Polished Garda stone from Buddhpura, Kota-Chittor Road, Granite, Marble and any other stone specified by JDA for Internal Areas except Museum
B	Polished Garda stone from Buddhpura, Kota-Chittor Road, Granite, Marble and any other stone specified by JDA for Museum Area
C	Flamed/Leathered Finish Garda stone from Buddhpura, Kota-Chittor Road , Granite for Ramps & O.T.S. Areas (outdoor/open areas)
6	Providing and fixing Heat Resistant Terrace Tiles (300 mm x 300 mm x 20 mm) withSRI (solar refractive index) > 78, solar reflection > 0.70 and initial emittance > 0.75 onwaterproof and sloped surface of terrace, laid on 20 mm thick cement sand mortar inthe ratio of 1:4 (1 cement : 4 coarse sand) and grouting the joints with mix of whitecement & marble powder in ratio of 1:1, including rubbing and polishing of the surfaceupto 3 cuts complete, including providing skirting upto 150 mm height along theparapet walls in the same manner and joint filling with white cement and colour pigment As per Detail to be provided by JDA
	Heat resistant terrace tiles
7	Providing and laying M30 grade controlled cement vacuum processed concrete pavements including mixing and vibrations concrete with necessary needle vibrators and surface with screed board vibrating complete in all respect with 20/25 mm stone aggregate (crusher broken) including anti-skid textured finish to required camber/ super lavation and grade including curing etc. as per specification with cement concrete M-30 grade including cost of Steel frame work for sides of C.C. pavement consisting of M. S. channels flats and angles with required steel pegs (some of them may left embedded in concrete/ including providing frame work. Cutting of construction joint/ longitudinal joint 4 to 6 mm. wide using mechanical concrete cutter including cost of diamond bit cutting wheel and filling of bitumen sealing compound in groove 25mm thick.including cost of sealing compound. Synthetic Polyester Triangular Construction Fiber of length 6 mm / 12 mm / 18 mm with specific gravity 1.34 to 1.40 and diameter 10 - 40 microns and melting point > 220 degrees centigrade by using 125 gm fiber for 50 kgs
	150mm thk. VDC (Floor Concrete at Basement)
8	Providing and fixing 1st quality MAT finished ceremic tile size 300x300mm confirming to IS : 13755 and IS : 15622 colour suchas white, grey, ivory, fume red brown, light green, light blue and other light shades in floors, steps, pillars etc. laid on a bed of neat cement slurry finished with flush pointing in the white cement mixed with pigment to match the shade of the tile complete (including the cost of cement mortar bed 1:4
	In toilets
	FALSE CEILING WORKS
9	Providing and fixing in position P.O.P. decorative false ceiling over G.I. metal frame work of appd. quality and wire mesh as per standard detail. The main G.I. frame (24g x 2" x 1") shall be at 2'6" c/c both ways and intermediate frame (21/2" x ¾" x 24g) shall be at 15" c/c both ways. The main G.I. member to be hanged with help of G.I angle of 1" x 1" x 24 gauge and additional M.S flats 3/4" x 1/8"/m.s angle (duly painted with red oxide) and dash fasteners and adjustable clamps with nuts and bolts including all necessary work required. Expanded metal mesh (0.07 Kg/Sft) shall be firmly stretched and screwed to the intermediate frame with G.I. washers and average 20 mm plaster of paris to be applied on in two layers. Necessary provisions shall be made for cut outs for air conditioners supply, return air grills, slits, light fittings, smoke detector and music speaker etc. The job shall include making steps ceiling, vertical surfaces etc. 50% OF Ceiling Area.
	In restaurant
10	False Ceiling:-(Metallic type) Providing and fixing false ceiling G.I tiles metal sheet semiperforated of size 600 X 600mm GI. Section for grid suspension system cut outs to be made for accommodation light fixtures complete in all respect as per site condition.
	Toilets
	DOORS
11	Well designed entry gate of hard wood, decorative carvings and designs, glass gates, air through system etc. as per elevation drawing and design approved by JDA.
	Wooden and glass entry gates
12	Providing and fixing of Pre-used wooden (ship-wood) Single or double rebate Frames and External grade board solid core single or double leaf flush door shutters ISI 2202-67 marked, 40 mm thick shutter with Decorative Teak veener both side with melamine polish, using Phenol formaldehye resin, in glue both sides with approved steel fittings complete as per Annexure 'A' IS 2202 (Part I & II) 1999/1983, with required Hardware accessories, complete in all manner As per Detail to be provided by JDA
	Flush Doors (Both side Veneer Finish with Melamine polish)) + Pre-used Wooden Frame (Ship-wood)

13	Supply & fixing of 83mm thick, having STC 38 Characteristics acoustic cum fire check door shutters, having Fire rating 120 Minutes minimum, including door frame of section 145mm x 75mm marrrantti wood fixed to the door jambs with anchor fastners as required, having infill of 47mm thick resin bonded glasswool of 24kg/cum density coated with FR Acrylic Sealant Sandwiched between two 9 mm thick calcium silicate boards (Starpan or equivalent) 100% without asbestos, Brucite and Meerschaum having a density not more than 1150kg/cum and thermal conductivity 0.14 W/M*K faced with 8mm thick commericial ply (green/merino/century) with heat activated intumescent fire seal strip of size 10mm x 4mm mounted in the grooves having hardwood lipping of size 15mm x 70mm and fire retradant 1mm thick laminate (merino/century/greenlam) facing on both sides in desired shade and colour. The door tobe complete with all acoustic seals RP 24,16 & 38 (Lorient/ Astroflame U.K./Raven/Marshall) . The work shall be executed as per drawings ,specifications & instructions of engineer in charge. (Note: Contractor to submit shop drawing & Test certificates from manufacturer (The Manufacturers should already have a test report with complete Seals tested from CBRI Roorkee for the total design including door closers and panic bar) for approval of the Engineer incharge) . Recommended Make: Gyptech / Navair. Providing and fixing panic bar / latch (Double point) fitted with a single body, Trim Latch & Lock on back side of the Panic Latch of reputed brand and manufacture to be approved by the Engineer- in- charge, all complete. For Double door. Make Enox / Hafele/ Dorma / Briton: Double Leaf (for all exits)
	Fire Escape Doors (As/detail)
	WINDOWS & DOOR WINDOW ASSEMBLY
14	UPVC Windows & DW (DGU Toughened glass, 6mm+12mm+5mm), Seam less welding and Tracks / slider and mesh (Teak Finish with Hardware and accessories) as spcified by J.D.A.
	PLASTER
15	Providing and Applying Gyproc Gypsum Plaster conforming to I.S.2547 (Part I & II)1976 internally at 12-15mm average thickness of Saint-Gobain India -Gyproc make, as per manufacturer's instructions at all floors and locations of masonary works, brick and RCC finished to correct line, level, smooth finish and plumb including preparing the surface, scaffolding, etc., complete to the entire satisfaction of the engineer at site. Providing and Fixing of Fiber mesh of 145 GSM of Saint Gobain Gyproc Make, at the junction of RCC and brick and in places of conduits work will be charged extra. Providing & Applying Gyproc Bond It on RCC Surfaces, a polymer bonding agent as a replacement of Hacking.**
	Internal Areas except Toilets
16	20mm thk. Plaster on new surface on wall in cement sand mortar 1:4 including raking of joints etc. complete fine finish
	Internal Plaster in toilets
	POINTING WORK
17	Deep Groove Pointing on stone masonary in cement sand mortar 1:3 (1-Cement:3-Sand), finished and complete in all respect.
	Exposed Stone Masonry Walls
	CLADDING/DADO
18	Providing and fixing imported marble, 15-18 mm thick on Walls surface using 1:3 cement sand mortar with a top layer of white cement and to wood ply surfaces using wood to stone adhesive jointing with white cement mortar 1:2 (1white cement : 2 marble dust) with pigment to match the shade of the marble slab including grinding, rubbing and polishing & molding as perdesign & drawing complete.
	Lift Cladding in Sandstaone/ Granite / Tile
19	Providing and fixing 1st quality standard white, grey, ivory, fume red brown, light green, light blue and other light shades glazed tiles confirming to IS : 13753 & IS :15622 of size 200mm x 300mm in walls, floors, steps, pillars etc. laid on a bed of neat cement slurry finished with flush pointing in the white cement mixed with pigment to match the shade of the tile complete (excluding the cost of cement plaster on walls and pillar)
	Wall Tiles in Toilets
	PAINTING WORKS
20	**Internal Paint**
	Wall painting with Asian Velvet Touch, Royal, etc Plastic Emulsion paint in Trowel finish of approved brand and manufactuer to give an even shadeTwo or more coats on new work including preparation of base with primer, putty, lippy complete in all respect. Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.
21	**External Paint**
	Finishing walls with textured exterior paint of required shade as per approved colour complete as per manufacturers specifications including primer coat and protecting coat Trowel Finish av. thickness 2000 to 2500 microns.
	M.S Work
22	MS work using MS Pipe/ Bar / Flat/ etc. and finishing with Paint As per Detail to be provided by JDA

A	Main Entrance gate as per design
B	Railing at staircase, ramps, cut outs etc
	FURNITURE WORKS
23	**Fixed Furniture as per requirement**
	Providng and fixing 600mm wide and 850mm length counters of 18mm thk. Commercial board cvered with 1.00mm thk. Laminate of appd. Shade and make. 75mm high two drawer units to be provided with 12mm thk. Ply base and front cover with finger grip detail fixed on telscopic chanel. Counter side to be made of 18mm thk. commercial board coered with 1.00mm thk. laminates of both sides with 35mm x 15mm steam beach lipping. Neccessary foot rest to be provided as / design. 675mm wide and 1050mm hight mirror with beved edge to be provided fixed on 9mm thk. ply.
24	**Moveable furniture**
A	90 no.s 4 seater Wooden Bench at Prayer Hall
B	50 no.s Tables (1.2mx0.75m) in Cafetaria
C	200 no.s Chairs in Cafetaria
D	1 no. Cash Counter in Cafetaria
E	2 no.s Chair for Cash Counter in Cafetaria
F	200 No.s of Lockers in Cloak Room (0.45x0.45x0.6m)
G	1 no. Storage unit in Cloak Room
H	Admin Block:
I	4 no. Assistant Table
J	1 no. Head Table
L	5 no. of Chairs
M	2 no. Racks (3.60x0.45x2.10m)
N	20 no.s Staff Chairs
O	5 no.s Staff Tables with Side Table
25	Manually Operated Roller Blinds with required pelemet as per aproved design and drawings by JDA.
	WATER PROOFING WORKS
26	Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of: i) Ist course of applying cement slurry @ 4.4 Kg/sum mixed with water proofing compound conforming to IS 2645 in recommended proportions including rounding off junction of vertical and horizontal surface. Ii) IInd course of 20mm cement plaster 1:3 (1 cement: 3 coarse sand) mixed with water. proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.. iii) IIIrd course of applying blown or residual bitumen applied hot at 1.7 Kg per sqm. of area. iv) IVth course of 400 micron thick PVC sheet .(Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 Kg/sqm.)
A	Toilets
B	Courts
	PLINTH PROTECTION
27	Providing and fixing First quality with uniform texture Stone On floor 15-18 mm thick over 30mm (Av.) thick base of CM 1:4 (1 cement : 4 coarse sand) jointing with white cement mortar 1:2 (1 white cement : 2 marble dust) & In Skirting shall be fixed to the wall surface using 1:3 cement sand mortar with a top layer of white cement and to wood ply surfaces using wood to stone adhesive with pigment to match the shade of the granite slab including grinding, rubbing and polishing and moulding as per design and drawing complete over 150mm thk. P.C.C. (1:4:8) and Kerbstone with required excavation & earth filling.
	Plinth Protection at Courtyards
	GOOD EARTH FILLING
28	Supply and stacking Good soil of earth at site complete including loading, unloading and transportation etc.
	Good Earth filling (Cinder fill)
	MISCELLANEOUS ITEMS
29	Providing and fixing Granite stone slab mirror polished and machine edge cut in walls, pillars, steps, Shelves, Sills Counters, Floors etc. laid on 12mm (Av.) thick base of cement mortar 1:3 (1 cement : 3 coarse sand) jointing with white cement mortar 1:2 (1white cement : 2 marble dust) with pigment to match the shade of the marble slab including grinding, rubbing and polishing complete, Jhunjhunu / Jalore (Red / Choclate Colour)
A	Granite counter/partition in toilets
B	Counter in kitchen

30	Exposed Random Rubble stone masonary (Teja Stone from Natata, Saiwal, Jaipur/ Siwar Pink sandstone)for superstructure above plinth level one storey height above 30 Cm. thick wall As per Detail to be provided by JDA
	Toe walls for railings and others as per requirement
31	Brick work in partition in super structure up to third storey 7 Cm. thick (brick on edges) using bricks of class designation 75 with nominal hoop rainforcement (2 Nos 6mm MS bar) at every fourth course in
	Toe walls for railings and others as per requirement
32	Supplying and fixing in cement sand mortar 1:4 sand or other approved stone dassa or coping of thickness 75 to 100 mm (fine dressed) As per Detail to be provided by JDA
A	Coping at Stone Toe Wall (50mm thk.) including rubbing, polishing and joint filling with white cement and colour pigment
B	Coping at Brick Toe Wall (50mm thk.) including rubbing, polishing and joint filling with white cement and colour pigment
33	Rebaring and fixing reiforcement bar in RCC for strengtheing the member with 25 mm dia steel bar in depth 200mm and fixied by fischer compound. in depth 300mm and fixied by fischer compound.
	Item wherever requires
34	Making of hole (width up to 150 mm) in R.C.C. slab/wall/beams by power driven drilling machine complete as per direction of EI above 150 mm thick
	Item wherever requires
35	Single Molded twin Shank Raised Pavement Markers of polycarbonate (manufactured from 3M, Avery or equivalent)

Following MAKE should be considered :-

LIST OF PREFERRED MAKES OF MATERIALS FOR CIVIL WORKS

S.N.	Material	List of Preferred Make
1.	(i) Ordinary Portland Cement	ACC, Ultratech, Wonder Cement
	(ii) White Cement	Birla White, J. K. White
2.	Water Proofing Compounds, Admixtures, Plasticizer, Super Plasticizer, Curing Compounds	Fosroc, ROFF/Dr. Fixit(Pidilite Industries), CICO, Sika, BASF, Ardex Endura (Bal Endura), Nerolac Perma
3.	Integral Water proofing compound with cement (For Plaster & Mortar)	Fosroc, Conplast 421 Dr. Fixit : LW+, Sika : Sikacim, & equivalent product of BASF, CICO, Ardex Endura, Nerolac-Perma, Asian Paints
4.	Water proofing for bathroom/ toilet/ balcony & other wet areas	Fosroc : Brush Bond/Brushcrete, CICO : Tapecrete, Dr. Fixit : Pidifine 2K, Sika : Nito Bond, Asain Paints : Damp Block 2 K & equivalent product of BASF, Ardex Endura, Nerolac-Perma
5.	Crystalline water proofing compound	Fosroc : Fosroc Crystalline
		Dr Fixit : Dr. Fixit Crystalline
		Sika : Sika Crystalline
		Asian Paints : Crystalline Quart
		& equivalent product of BASF, CICO, Ardex Endura, Pentron, Nerolac-Perma
6.	Grouts, Tile Adhesive	Latecrete, BASF, Ardex Endura, Ferrous Crete, Pidilite, UltraTech,

S.N.	Material	List of Preferred Make
8	Stone Adhesive	Pidilite - Fevimate excel, BASF, Ardex Endura, MYK Laticrete
9	Particle Board	Action TESA, Greenlam, Merino
10	Laminates	Action TESA, Greenlam, Century Ply, Merino, Sunmica
11	Flush door shutters	Duro, Century, Durian, Green ply.
12	Fire Rated Doors	Signum Fire Protection, Shakti Metdoor, NAVAIR, Sukri, Promat International
13	False Ceiling System	Armstrong, Hunter Douglas, USG Boral, Saint Gobain, Aerolite, Durlum, Gyproc
14	Plywood/ Veneer	Green ply, Century, Merino, Duro, Durian
15	Melamine Polish	Asian Paints Melamine Gold, Wudfin of Pidilite, Timbertone of ICI Dulux.
16	Floor Spring & Door Closure	Godrej, Dorma, Dorset, Kich
17	Aluminium Section	Hindalco, Jindal, Indian Aluminum co.
18	Anodised Aluminium Hardware (Heavy Duty)	Kilong, Alualpha, Classic, Ebco
19	Clear/Float/Frosted/ Toughen Glass/ Refractive Glass	Saint Gobain, AIS, Modiguard, Ashai Float.
20	Stainless Steel Railing, Accessories etc.	Dorma, Kich, GEZE, Godrej
21	S.S. Door & window & Fittings	Jindal, Dorma, Kich, Dorset, Godrej, Ozone
22	Silicon based water repellant /Weather Sealant	G.E. Plastics, Dow Corning, Wacker, BASF, Pidilite (Dr. Fixit/Roff), Nerolac-Perma
23	Poly-Sulphide Sealant	Fosroc, Pidilite (Dr. Fixit/Roff), Sika, BASF, Nerolac-Perma
24	Ceramic tiles	Kajaria, RAK,Somany, Johnson, Marbito
25	Mosaic tiles/chequerred tiles	Ultra tiles, NITCO, hyper (Mayur), Pavcon
26	Vitrified Tiles (Satin/Matt/Glazed finish)	Kajaria, RAK,Somany, Johnson, Marbito
27	Dash / Anchoring Fasteners	HILTI, Fischer, Bosch, Wurth.
28	Cement Based Wall putty	Birla wall care, JK White, Berger, Asian Paints
29	Oil Bound Washable Distemper / Dry Distemper	Asian Paints : Professional Acrylic Distemper, Nerolac: Beauty Acrylic Distemper, Berger : Bison Acrylic Distemper, Dulux ICI : Maxilite
30	1st Quality Acrylic Distemper (washable/Ready mix/ Low VOC)	Asian Paints : Tractor Aqua Lock Paint, Berger : Commando or equivalent paints of Nerolac or ICI-Dulax
31	Acrylic Emulsion Paints	Asian Paints : Professional Premium Interior Emulsion Paint, Nerolac : Beauty Gold, Berger : Rangoli total care, ICI-Dulux : Super Cover
32	Plastic Emulsion Paint	Asian Paints : Apcolite Heavy Duty Premium Emulsion Paint, Nerolac : Impression, Berger : Easy Clean, ICI-Dulux : 3 in 1
33	Premium Acrylic Emulsion Paints (Interior)	Asian Paints : Royale Luxury Emulsion, Nerolac : Impression , Berger : Silk, ICI Dulux : Velvet touch

S.N.	Material	List of Preferred Make
34	Synthetic Enamel Paint	Asian : Apcolite Premium gloss enamel, Nerolac : Synthetic Hi gloss Berger : Luxol Hi gloss ICI -Dulux : Gloss Synthetic enamel
35	Cement Primer	Nerolac, BP White(Berger), Decoprime WT(Asian), White primer (ICI)
36	Steel Primer(Red Oxide Zinc Chromate Primer)	Asian Paints, Nerolac, Berger, ICI
37	Wood Primer	Asian Paints (Wood Primer - White/Pink), Berger ICI, Nerolac,
38	Epoxy Paint	Asian, Nerolac, Berger, ICI, Kansai Akzo Nobel
39	Fire Paint	Caboline, Akzo Nobel Coatings India Ltd., PROMAT, Jotun, Asian Paints, Berger
40	Mirror Glass	Atul, Modi Guard, Jaquar, CERA.
41	Stainless Steel Sink	Neelkanth, Niralli, CERA
42	UPVC Doors & Windows (PROFILE makers & their authorized Fabricators only)	Fenesta, KOMERLING, RHEAU, Aluplast.
43	Extruded Polystrene Insulation Board	Dowcorning, Supreme, Texas, Analco
44	Heat Resistant Tiles	Swastik, Thermatek
45	Gypsum Plaster	Ferrous Crete, Gyproc Saint Gobain, Boral, UltraTech-Birla white, JK lakshmi
46	Floor hardener	Ironite, Ferrok, Hardonate
47	Glass Wool	Dow Corning, U.P. Twiga, Isover
48	UPVC doors and window hardware	Rotto, Dorset, Kinlong
49	AAC Block Adhesive	Xtralite, Orifix, Ardex Endura, Ferrous Crete, UltraTech
50	AAC Block	UltraTech, Orilite, Seporex(Buildtex), HIL-Aerocon,
51	Laminated wall panelling	Century ply, Green ply, Royal Touch
52	Veneer wall panelling	Century ply, Green ply, Royal Touch
53	Wood work	Burma teak, Ghana, Sal wood, Nigeria, Ivory coast
54	led fixures	Philips, wipro
55	Furniture	Godrej
56	Paint	Asian paint, Burger
57	PVC laminate	D-Stona
58	Hardware for door window	Jindal, Dorma, Dorset, Godrej, Ozone
59	Aluminium work	Standard make approved by EI
60	Glass work	Modi, saint gobain
61	clips, hangers fasteners	Standard make approved by EI
62	HDF Jali	Standard make approved by EI
63	Electrical items	Standard make approved by EI
64	Sanitary items	Jaguar, Kajaria, Roca, Cera
All items should confirm to relevant IS codes.		

TECHNICALSPECIFICATIONS

NOTE: Normally all the required specifications are given below but if any how some specificationsis/are left out or in case of any discrepancy, then guidelines of PWD Specification./ ISI / orother relevant specifications of the product shall be followed as per direction and satisfactionofJDA.

5.1.1 ANTI-TERMITE TREATMENT

5.5.1.1 Chemicals

The treatment of the areas shall be carried out by applying one of the following chemicals at not less than the designated concentration:

Chemicals	Concentration
Biflex	TC 0.05% concentration
Dieldrin	0.5% applied in oil solution or water
Trichlorobenzene	1 part to 3-part oil

The Contractor shall clearly indicate along with his quotation the chemical he proposes to use. A daily record shall be maintained by the Contractor indicating the amount of work done and the quantity of chemical consumed for the work.

5.5.1.2Treatment at Junction of Walls and Floor

Special care shall be taken to establish continuity of the vertical chemical barrier on inner wall surfaces from the ground level (where it has stopped with the treatment described in 3.4 above) up to the level of the filled earth surface. To achieve this, a small channel 30 mm x 30 mm shall be made at all the junctions of wall and columns with the floor (before laying the sub grade) and rod holes made in the channel up to the ground level 150 mm apart and the rod moved backward and forward to break up the earth and chemical emulsion poured along with channel at the rate of 7.5 liters/m² of the vertical wall or column surface of the sub structure so as to soak the soil right to the bottom. The soil should be tamped back into place after this operation.

5.5.1.3 Treatment of Soil along external perimeter of building

After the building is complete, the earth along the external perimeter of the building should be rodded at intervals of 150 mm and to a depth of 300 mm. The rods should be moved backward and forward parallel to the wall to break up the earth and chemical emulsion poured along the wall at the rate of 7.5 litres/m² of vertical surfaces. After the treatment, the earth should be tamped back into place. Should the earth outside the building be graded on completion of building, this treatment should be carried out on the completion of such grading. In the event of filling being more than 300 mm, the external perimeter treatment shall extend to the full depth of filling up to the ground level so as to ensure continuity of the chemical barrier.

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5.5.1.4 Treatment for Walls retaining soil above floor level

Retaining walls like the basement walls or outer walls above the floor level retaining soil need to be protected by providing chemical barrier by treatment of retained soil in the immediate vicinity of the wall, so as to prevent entry of termites through the voids in masonry, cracks and crevices etc., above the floor level. The soil retained by the walls shall be treated at the rate of 7.5 liters/m² of the vertical surface so as to affect a continuous outer chemical barrier in continuation of the one formed under column centre.

5.5.1.5 Treatment of Soil surrounding pipes, wastes and conduits

When pipes, wastes and conduits enter the soil inside the area of the foundation, the soil surrounding the point of entry must be loosened around each such pipe, waste or conduits for a distance of 150 mm and up to a depth of 75 mm before the treatment is commenced.

When they enter the soil, they shall be similarly treated unless they stand clear of the walls of the building by about 75 mm for a distance of over 300 mm.

5.5.1.6 Treatment to Expansion Joints

Expansion joints at ground floor level are one of the biggest hazards for termite infestation. The soil beneath these joints should receive special attention when the treatment under 3.5 is carried out. This treatment should be supplemented by treating through the expansion joint after the sub grade has been laid at the rate of 2 liters/m.

5.5.1.7 Spraying Equipment

A pressure pump shall be used to carry out spraying operations to facilitate proper penetration of chemicals into the earth.

5.5.1.8 Safety Precautions

These chemicals shall be brought to site in the form of emulsifiable concentrates. The containers should be clearly labeled and should be stored carefully so that children and pets cannot get at them. They should be kept securely closed. Workers should wear clean clothing and should wash thoroughly with soap water, especially before eating and smoking. If chemicals splash into the eyes, they shall be flushed with plenty of soap, water and immediate medical attention should be sought. The concentrates are oil solutions and present a fire hazard owing to the use of petroleum solvents. Flames, sparks, etc. should not be allowed while mixing. Care should be taken in the application of chemicals to see that they are not allowed to contaminate wells or springs, which serve as sources of drinking water.

5.5.1.9 Guarantee - 10 years

In the unlikely event of any treatment becoming necessary subsequently during the guarantee period, necessary inspection and treatment as required shall be carried out free of cost.

5.1.2 CONCRETE WORK: -

5.5.2.1 Scope: -

This specification describes the general requirements for concrete to be used on projects using in-situ production facilities including the requirements in regard to the quality, handling, storage of ingredients, proportioning, batching, mixing and testing of concrete, the requirements in regard to the quality, storage, bending and fixing of reinforcement and the transportation of concrete from the mixer to the place of final deposit, placing, curing, protecting, repairing and finishing.

5.5.2.2 Applicable codes and Specifications: -

5.5.2.2.1 Cement: -

Cement used on the works shall comply with the requirements of IS:269-1976 for ordinary or low heat Portland cement, IS:8112-1976 for high strength ordinary Portland cement and IS:1489-1976 for Portland Pozzolana, IS:455-1989 for Slag Cement and obtained from approved sources.

If ordered by the Engineer-in-Charge certificate of tests from an approved laboratory shall be obtained at the Contractor's cost. Samples for test shall be extracted as in Clause 5.6 IS:3535-1966 within one week of delivery and the test shall be made within four weeks of delivery and the test shall be made within four weeks of delivery. All cement shall be stored in weatherproof structures and prevented from damage by moisture. These buildings shall be

provided by the Contractor at his own cost and placed in locations approved by the Engineer.

Provision for storage shall be ample and shipments of cement as received shall be separately stored so as to provide easy access for identification and inspection of each shipment. Storage buildings shall have a capacity for the storage of sufficient cement to allow sampling & testing at least 15 days before use. The cement should be stacked on wooden platform leaving a gap of at least 150 mm between ground& the cement bag. The bags should not be touching to the walls & should be placed at least 300 mm away from sidewalls. Maximum 10 bags or max by 5'5" in height for safe handling should be allowed in each stack. While shitting the bags form one place to other no hooks shall be allowed.

Stored cement shall meet the test requirements at any time after storage when re-test is ordered by Engineer.

The Contractor shall keep an accurate record of the delivery of cement along with its batch no & week of manufacture if the cement is 4-week-old at the time of purchase should not be purchased and its use in the work. Copies of the record shall be supplied to the Engineer-in-Charge as required.

Cement shall be used in the sequence in which it is received & within 8 weeks from the date of manufacture. No cement shall be unnecessarily stored for a long period. If the cement becomes lumpy it shall be removed from the site immediately. Any cement which has deteriorated or which has been damaged or contaminated, whether during transit to the site or at the site or otherwise, shall not be used and shall be immediately removed from the site and replaced at the expense of the Contractor.

5.5.2.2.2 Admixtures: -

The admixture shall be conformed to IS:9103. The use of admixtures to improve workability is allowed only if there is a proven evidence that neither the strength nor the other requisite qualities of concrete and/or steel, accessories, grout etc. are impaired by their use. The use of admixtures containing Calcium Chloride, Fluorides, Nitrates and Sulphates is prohibited.

The Engineer's decision on all matters relating to the use of admixtures shall be final.

Admixtures shall be stored in a suitable weatherproof building. Any material which has deteriorated or which has been contaminated or damaged whether during transit or at site shall not be used and shall be immediately removed from the site and replaced at the Contractor's own expense.

5.5.2.2.3 Dosage: -

Optimal dosage of a superplasticizer is important. Dosage beyond the optimal dosage may be detrimental and can cause segregation or excessive retardation, which can be harmful to concrete. The dosage optimization can be done by using Marsh Cone apparatus or using

mini slump test or by the flow table methods described in ASTM C109.

5.5.2.2.4 Aggregates: -

All aggregates shall generally conform to the requirements of IS:383. Materials shall be used only from sources of supply approved by the Engineer. Any material which has deteriorated or been contaminated shall not be used for concrete. All aspects of aggregates handling and storage are subject to the approval of the Engineer and shall be such as to minimize segregation and breakage and prevent contamination by grass, soil, wood, sawdust, oil, aggregates of other sizes or other foreign materials and so that adequate supplies are available at site in advance of the requirements. Each size of aggregate shall be stored on a separate platform or stockpile at locations to be approved by the Engineer and such platform or stockpiles shall be sufficiently removed from each other to prevent the material at edges of the edges of the piles from becoming intermixed by constructing bund walls at constructional cost. If the aggregates are stockpiled on the ground, the bottom portion of the stockpiles within one foot of the ground shall not be used.

For both fine and coarse aggregates, tests shall be carried out, for physical characteristics, limits of deleterious substances and soundness prior to use and also whenever the source of supply is changed. All tests will be conducted by the Contractor's expense at a laboratory or in facilities approved by the Engineer.

Sand shall be of approved quality, clean, sharp and free from injurious amount of silt dust, mica, shells, soft and flaky particles, shale, alkali, organic matter, loam or other deleterious substances. The sand shall be from a source approved by the Engineer, and if required by him it shall be thoroughly washed, screened and graded by the Contractor at his own expense to the satisfaction of the Engineer, and he shall include in his rate the cost of washing. It shall be within the range of grading zone I and grading zone II of table III of IS:383. The sand shall have a fineness modulus of not less than 2.2 or more than 3.2. Stone dust or grit shall not be permitted.

Coarse aggregates shall be rounded / angular crushed stone of uniform sizes and gravel or shingle shall not be permitted. The whole of the ingredients of the coarse aggregates shall consist of hard stone free from deleterious substances and contain soft or elongated pieces or white spots. If it is considered necessary, the Engineer may instruct that it be washed, screened and graded at the Contractor's expense. The Contractor shall include in his price for concrete the cost of washing and screening the aggregate. Coarse aggregates of size 4.75 mm to 10 mm called as M1 & of size 10mm to 20mm called as M2 shall stacked separately & should not be allowed to get intermixed at site prior to putting in concrete mixer by constructing bund walls at stock pits at contractors cost. The coarse aggregates shall have a fineness modulus of not less than 5.5 or more than 8.0.

5.5.2.2.5 Mixing Water: -

The water for mixing concrete shall be potable & shall be first tested at the Contractor's expense for its suitability by a laboratory approved by the Engineer. It is usually required to be fit for drinking, or to be taken from an approved source. This is to ensure that the water is reasonably free from such impurities as suspended solid, organic matter, dissolved salts which may adversely affect the proper ties of the concrete, especially the setting and hardening. If required IS:3025 and IS:3550 may be followed for testing. If the quality of water to be used for mixing concrete is in doubt, it should be assessed by comparing the setting times of cement paste and the compressive strength of concrete made with it and with tap water under similar conditions. Seawater shall not be used for concrete work.

5.1.3 REINFORCEMENT STEEL WORKS: -

5.5.4.1 General

The steel to be used for reinforcement concrete work shall comply with the requirements of Indian Standard Specification No. 2062, 432, 1139 and 1786. Steel bars made for rerolling old rails, bars etc. will not be allowed to be used on any account and the Contractor must produce proof that such bars are not being used. Should the results of tests conducted through an approved laboratory at the Contractor's expense made in accordance with the provisions of relevant Indian Standard Specification show that the steel does not comply with these specification, the Engineer may, at his discretion, reject the lot or lots from which the sample or samples were taken and the same shall not be used in the works but shall be removed there from and the work already executed with such bars may be ordered to be demolished at the Contractor's cost. The Contractor will not be paid for the demolished work nor will the completion time limit be extended, in that case.

All steel used for reinforcement shall be free from loose scales or rust which must be removed with a stiff wire brush and coated with neat cement as directed. Bars must also be free from oil or paint.

All bending shall be done cold, gradually, evenly and without jerks. All protruding bars to which other bars are to be spliced later, must be protected from rusting by a coat of thin neat cement grout and contractor's rates shall be inclusive of this item. The steel shall be properly braced, supported and otherwise held in position by plastic or concrete spacer blocks and steel chairs so as to prevent displacement while concrete is put in. Tiles or stone chips will not be permitted to be used as spacer blocks. The correct number and size of reinforcing bars, stirrups and binders shall be provided and placed in position strictly according to the contract drawings and instructions. This must be looked after with proper care and checked over by a competent foreman of the Contractor personally and finally before pouring the concrete. A steel fitter should be in full time attendance while pouring concrete to adjust and fix the reinforcement.

5.5.4.2 Storage: -

The reinforcement shall not be kept in direct contact with the ground but stacked on top of an arrangement of timber sleepers or the like.

If the reinforcing rods have to be stored for a long duration, they shall be coated with cement wash before stacking and/or be kept under cover or stored as directed by Engineer.

Fabricated reinforcement shall be carefully stored to prevent damage, distortion, corrosion and deterioration.

5.5.4.3 Quality: -

All steel shall be of Grade 1 quality unless specifically permitted by Engineer. No rerolled material will be accepted. If demanded by Engineer, Contractor shall submit the manufacturer's certificate for steel. Random tests on steel supplied by Contractor may be performed by Owner as per relevant Indian Standards. All costs incidental to such tests shall be at Contractor's expense. Steel not conforming to specifications shall be rejected and shall be carried away from site by Contractor at his cost.

All reinforcement shall be clean, free from grease, oil, paint, dirt, loose mill scale, loose rust, dust, bituminous material or any other substances that might destroy or reduce the bond. All rods shall be thoroughly cleaned before being fabricated. Pitted and defective rods shall not be used. All bars shall be rigidly held in position before concreting. No welding of rods to obtain continuity shall be allowed unless approved by Engineer.

If welding is approved, the work shall be carried out as per IS:2751 according to best modern practices and as directed by Engineer.

In all cases of important connections, tests shall be made to prove that the joints are of the full strength of bars welded, special precautions, as specified by Engineer, shall be taken in the welding of cold worked reinforcing bars and bars other than mild steel.

5.5.4.4 Laps: -

Laps and splices for reinforcement shall be as shown on the drawings. Splices in adjacent bars shall be staggered and the locations of all splices, except those specified on the drawings or approved by Engineer. The bars shall not be lapped unless the length required exceeds the maximum available lengths of standard bars.

5.5.4.5 Bending: -

Reinforcing bars supplied bent or in coils, shall be straightened before they are cut to size. Straightening of bars shall be done in cold and without damaging the bars. This is considered as a part of reinforcement bending fabrication work.

All bars shall be accurately bent according to the sizes and shapes shown on the detailed working drawings/bar bending schedules. They shall be bent gradually by machine or other approved means. Reinforcing bars shall not be straightened and regent in a manner that will injure the material; bars containing cracks or splits shall be rejected. Bars shall be bent cold, except for diameter of over 25 mm, which may be bent hot, if specifically approved by Engineer. Bars, which depend for their strength for cold working, shall not be bent hot. Bars bent hot shall not be heated beyond cherry red color (not exceeding 845oC) and after bending shall be allowed to cool slowly without quenching. Bars incorrectly bent shall be used only if the means used for straightening and re-bending be such as shall not, in the opinion of Engineer, injure the material. No reinforcement shall be bent when in position in the work without approval, whether or not it is partially embedded in hardened concrete. Bars having kinks or bends other than those required by design shall not be used. Contractor shall prepare his own bar bending schedule as per RCC drawings as per requirement and as directed and instructed, keeping wastage of bar length to minimum possible in general & bigger diameter of bars in particular. Contractor shall keep a competent person for supervising bar cutting &

bending so that already cut length of bar is utilized before a new length of bar is taken.

5.5.4.6 Fixing: -

Reinforcement shall be accurately fixed by any approved means and maintained in the correct position shown in the drawings by the use of blocks, spacers and chairs as per IS:2502 to prevent displacement during placing and compaction of concrete. Bars intended to be in contact at crossing points shall be securely bound together at all such points. The vertical distances required between successive layers of bars in beams or similar members shall be maintained by the provision of mild steel spacer bars at such intervals that the main bars do not perceptibly sag between adjacent spacer bars. Binding wire shall be 16 gauge annealed soft iron wire for tying bars.

5.5.4.7 Cover: -

Unless indicated otherwise on the drawings, clear concrete cover for reinforcement (exclusive of plaster or other decorative finish) shall be as follows:

At each end of reinforcing bar, not less than 25 mm nor less than twice the diameter of the bar.

For a longitudinal reinforcing bar in a column, not less than 40 mm, nor less than the diameter of the bar. In case of columns of minimum dimension of 200 mm or under, with reinforcing bars of 12 mm and less in diameter, a cover of 25 mm to be used & provided.

For longitudinal reinforcing bars in a beam, not less than 25 mm or less than the diameter of the bar.

For tensile, compressive, shear, or other reinforcement in a slab or wall not less than 13 mm, nor less than the diameter of such reinforcement.

For any other reinforcement, not less than 13 mm, nor less than the diameter of such reinforcement.

For footings and other principal structural members in which the concrete is deposited directly against the ground, cover to the bottom reinforcement shall be 75 mm. If concrete is poured on a layer of lean concrete the bottom cover may be reduced to 50 mm.

For concrete surfaces exposed to the weather or the ground after removal of forms, such as retaining walls, grade beams, footing sides and top, etc. not less than 50 mm.

Increased cover thickness shall be provided, as indicated on the drawings, for surfaces exposed to the action of harmful chemicals (or exposed to earth contaminated by such chemicals) acid, alkali, saline atmosphere, Sulphur us smoke etc.

For reinforced concrete members, totally or periodically immersed in sea water or subject to sea water spray, the cover of concrete shall be 50 mm more than those specified above.

For liquid retaining structures, the minimum cover to all steel shall be 40 mm or the diameter of the main bar, whichever is greater. In the presence of sea water and soils and waters of a corrosive character the cover shall be increased by 10 mm.

Protection to reinforcement in case of concrete exposed to harmful surroundings may also be given by providing a dense impermeable concrete with approved protective coatings, as specified on the drawings. In such a case, the extra cover mentioned above, may be reduced by Engineer to those shown on the drawings.

The correct cover shall be maintained by cement mortar (1:2) cubes, PVC cover blocks or other approved means. Reinforcement for footings, grade beams and slabs on subgrade shall be supported on precast concrete blocks as approved by Engineer. The use of pebbles or stones shall not be permitted.

The minimum clear distance between reinforcing bars shall be in accordance with IS:456 or as shown in drawings.

For bars in corrosive environment these covers will be increased by 20 mm in every case.

5.5.4.8 Inspection: -

Erected and secured reinforcement shall be inspected and approved by Engineer prior to placement of concrete.

5.1.4 MASONRY: -

5.5.5.1 Scope

This specification covers furnishing, installation, repairing, finishing, curing protection, maintenance and handling of masonry and allied works for use in structures and locations covered under the scope of the Contract.

5.5.5.2 General

All the connected masonry in structure shall be carried up neatly at one uniform level throughout but where breaks are unavoidable, the joint shall be made in good long step so as to prevent cracks developing between new and old work. All joints shall be full of mortar. The work shall be kept constantly moist on all the faces for a period of at least ten days and wetted twice a day thereafter for a month. Green work shall be protected from rain by suitable covering. The work shall also be suitably protected from damage during construction.

5.5.5.3 Scaffolding

Simple scaffolding shall be allowed for the masonry work. In this case, the inner end of the horizontal scaffolding pole shall rest in a hole provided in the header course only. Only one header for each pole shall be left out. The holes left in masonry work for supporting the scaffolding shall be filled and made good before plastering.

The Contractor shall be responsible for providing & maintaining sufficiently strong scaffolding, so as to withstand all loads likely to come on it.

5.5.5.4 Mortar

Mix for mortar shall be specified in the schedule of items. For cement and sand mortar, cement and sand in required proportions shall be mixed dry in a mechanical mixer and then water added and mixed further. Minimum quantity of water shall be added to achieve working consistency. Surplus mortar dropping from masonry, if received on surface free from dirt may be mixed with fresh mortar if permitted by the Engineer who may direct additional cement to be added without any extra payment. No mortar that has stood for more than half an hour shall be used

5.5.5.5 Masonry work

5.6 STONEMASONRY:

Jaipur is surrounded by a belt of Aravali hills having good quality of building stone.

StonesavailablefromquarriescalledSAIWAD,locatedinTehsilAmer,atadistanceofabout20Km from the site,hasgood qualityofstones available in differentcolours.

GENERALSPECIFICATIONOFSTONEMASONRY:
Normally, stones used should be small and uniform to be liftedand placed by hand.The length ofthestones shouldnotexceedthree timesthe heightandthe breadthofbaseshouldbegreaterthan3/4ofthethicknessofthe wall,notlessthan150mm.

The height of the stones may be upto 300mm. Stones with round surface should not beused. All stones shouldbe wetbefore use. Percentage of waterabsorptionshall notbemorethan5%.Minimumcrushingstrengthofbuildingstonesshallbe200Kg/sq.cm.

5.7 RANDOMRUBBLEMASONRYBUILTINCOURSES:

Thestones are hammer-dressed on bed andtopsurface unless naturalcleavage ofthestonegiveparallel faces. No face of stones to be narrower or shorter than itsheightandnosuchstonesshall,tailintothewalllessthanitsheightandatleast1/3ofthefacestonesshall tail intothewall twice theirheight.

RandomRubble stone masonry for foundation andplinth should be in Cement SandMortar 1:6(1Cement:6Sand)forabove 300mmthickwall.

Hammerdressedexposed Random Rubblemasonrytobe builtin courses withstoneofapprovedquarryforsuperstructure aboveground level incementsandmortar1:6 (1cement:6Sand)includingfilling the jointsinwhitecement marblepowder (1:2) with an admixtureof pigment matching the stone shade for 30 cm. thickwall.

5.7.5 BED&JOINTS:

Notto exceed 12mm thick. The stones shallbreak jointson the faces foratleast halftheheightwiththoseofcoursesabove andbelow.

5.7.6 HEIGHTOFCOURSES:
Notless than 150 mm in height andbroughtupto level beds and shall be laidatrightangle.ReferJDA'sdetaileddrawings inthis respect.

5.7.7 BONDSORTHROUGHSTONES:
In the interior thickness ofthe wall bondstones ofatleast 450mm long shallbe given soasto approximately provide through-bond of longstones at every1500mmdistance.

5.7.8 QUOINSORCORNERSTONES
Facesbedstobesquaredbackcarefullyatleast100mmandjoints65mm.

5.7.9 HEARTING
Stonestobenotlessthan150mminanydirection,carefullylaid,hammereddownwith woodenmalletinto placeand solidly beddedwithmortar,chips and spalls

being wedgedintovoid thickbeds ofjoints andmortar.

5.8 BRICK MASONRY

Bricks shall be table molded, sound, hard, homogeneous in texture of uniform size, shape and color, must be well burnt so as to give a clear ringing sound when struck. They shall be clean, free from flaws, cracks, chips, stones or lumps of any kind, especially lime. These shall not show appreciable signs of efflorescence either dry or subsequent to soaking in water. They shall have sharp edges and angles and even surfaces and shall be sound & hard. They shall be from a source approved by the Engineer-in-Charge and quality of bricks should be such that they shall not absorb more than 20% of water by weight after immersion in water for 24 hours and shall have a crushing strength of 40 kg/cm² minimums.

All bricks shall be thoroughly soaked in water before use. They should be soaked for about twelve hours for this purpose. No broken bricks shall be used except as closures. The courses shall be laid flush in mortar and every course shall be thoroughly grouted. Joints shall be broken vertically and they shall not exceed 10 mm in thickness. The work shall not be raised more than 12 courses per day. It shall be kept constantly wetted for at least 10 days and wetted twice a day thereafter for a month. All joints shall be thoroughly flushed with mortar of mix as specified in the schedule of quantities, at every course. Care shall be taken to see that the bricks are bedded effectively and all joints completely filled to the full depth.

The joints of brickwork to be plastered shall be raked out to a depth not less than 10 mm as the work proceeds. The surface of brickwork shall be cleaned down and watered properly before the mortar sets.

Before starting the brick masonry, the concrete surface e.g. beams, columns, slabs, chajjas etc. shall be thoroughly hacked and washed to remove all mud, dirt, loose particles etc. When fresh brick work is to be started on the old brick masonry, the surface should be thoroughly cleaned and washed to remove all loose mortar, mud, dirt etc.

The size of a brick shall be 230 x 115 x 75 mm. 230 mm & 115 mm thick walls will be built with fair face on one side only. All walls of greater thickness shall be built without exception with fair face to both sides.

The Contractor shall provide all necessary openings for doors and windows or other services and shall embed electrical fittings, fixtures and sleeves supplied by another agency, if required, at no extra cost.

The rates for brickwork shall also include the cost of the following:

1) Making good all holes, chases etc. to any depth due to conduit pipes, hold fasts, switches, plug boxes, exhaust fans openings and other openings.
2) Single Brick Masonry: Brickwork 115 mm they shall be provided with transoms & mullions when length or height of the wall exceeds 2 m. Materials and workmanship for a half brick on edges partition wall shall be specified above. The wall shall be stiffened at interval of 1 m vertically & 3 m horizontally by RCC M20. Stiffeners of size 115 mm x 115 mm thickness to the full length of wall and shall be provided with two numbers 8 mm MS Bars as center reinforcement (only the

reinforcement will be paid separately under relevant items.) Measurement of brickwork shall be in square meter. The rate shall also include the cost of making good holes, chases etc. at any depth due to the conduit pipes, hold fasts, switches, plug boxes, exhaust fan openings and other openings.

3) Bad workmanship if observed will lead to the rejection of the work and the bad work will be demolished and redone to the satisfaction of the Engineer by the Contractor at his own cost.

5.1.5 PLASTERING: -

5.5.6.1 Scope

This specification covers applying the plaster to old and new contracted concrete and masonry in the structure as per specified proportions, in line and level including making good surface, curing and as per the instruction by Engineer.

5.5.6.2 Applicable Codes

IS:383	Specification for Coarse and Fine Aggregates
IS:412	Specification for Expanded Metal Sheets for General Purpose.
IS:1542	Specification for Sand for Plaster
IS:1635	Code of Practice for field Slaking of Building lime and Preparation of Putty.
IS:1661	Code of Practice for the Application of Cement and Cement Lime Plaster Finishes
IS:2394	Code of Practice for the Application of Lime Plaster Finish
IS:2402	Code of Practice for External Rendered Finishes
IS:2645	Specification for Integral Cement Waterproofing Compound.

5.5.6.3 General

The item refers to plastering concrete or masonry surface in cement mortar of specified proportion and specified thickness including scaffoldings, curing etc. complete as specified and directed.

5.5.6.4 Cement Plaster:

5.5.6.4.1 Cement

It shall conform to IS:269-1958 when the type of cement is not specified, ordinary Portland cement shall be used.

The weight of ordinary Portland cement shall be taken as 1140 kg/m³ (90 lbs per cubic foot). The measurement of proportion of cement should normally be on the basis of weight and whole bags, each undisturbed and sealed 50 kg. A bag being considered equivalent to 35 liters (0.034 cu.m.) in volume. When part bag is required, cement shall be taken by weight, assuming 35 liters to be equal to 50 kg. (1 cu.ft. = 90 lbs). Care should be taken to see that each bag contains full quantity of cement.

5.5.6.4.2 Tests

When the tests are considered necessary, they shall be carried out as indicated in IS:269-1958. The Contractor should ensure that the cement is of sound and required quality.

5.5.6.4.3 **Storage**

Cement required for the use shall be as fresh as possible and stored on planks raised150 mm (6") to 200 mm (8") above the floor and stacked about 300 mm (12") away from the walls in suitable closed weatherproof buildings at the work site or at the selected approved site, in such a manner as to prevent deterioration by dampness or moist atmosphere or intrusion of foreign matter. Cement shall be stored in such a way as to allow the removal and use of cement in chronological order of receipt i.e. first received first used. Not more than 10 bags or max by 5'5" in height for safe handling shall be stacked vertically in one pile and maximum width of the piles should not be more than 3 m (10' –0"). Any cement, which has deteriorated, caked or which has been damaged shall not be used. Cement concerning which there is doubt shall not be used pending testing & satisfactory results. Cement that is condemned shall be immediately removed from the work site. When temporarily stored in the open for use within 48 hours, it shall be kept on platform of planks about 150 mm (6") to 200 mm (8") above ground and covered with a tarpaulin. Ordinary cement stored for more than one month from the date of receipt from the factory shall be subject to test and used only if found satisfactory. The cost of test shall be borne by the agency responsible for the storage after two months from receipt.

Different kinds of brands of cement of the same brand from different mills should be stored in different groups and should not be mixed during use except when directed in writing by the Engineer. The cement shall not be stored for unduly long periods. It should not be handled in such a way as to impair its strength or useful characteristics.

5.5.6.4.4 **Sand**

Sand shall conform to IS:383-1952 and equivalent portion of IS:515-1959 as directed by the Consultant.

Sand shall be crushed stone screenings or natural sand. Sand shall be clean, well graded, hard, strong, durable and gritty particles free from injurious amounts of dust, clay, kankar nodules, oft or flaky particles, shale, alkali, salts, organic matters, loam, mica or other deleterious substances and shall be approved by the Consultant.

The maximum size of particles shall be limited to 5 mm (3/16"). Where best trap sand available in the region contains murrum or laterite particles, such particles may be allowed up to 5%. If the fine aggregate contains more than 4% of clay, dust or silt it shall be washed. If the quality of fine aggregate is doubtful, it shall be tested for clay, organic impurities and other deleterious substances as laid down in IS:383-1952. It shall not contain deleterious materials in such quantity as to reduce the strength or durability of the mortar. Sea sand shall not be used.

The sand shall not contain more than 8% of silt as determined by field test with measuring cylinder.

The fine aggregate for cement mortar for first coat of plaster should generally satisfy the following grading:

I.S. Sieve	Percentage by Weight Passing Sieve
4.8 mm	100
2.4 mm	80 - 95

1.2 mm	70 - 90
0.6 mm	40 - 85
0.3 mm	5 - 50
0.15 mm	0 - 10

The fineness modulus shall not exceed 3.0.

The fine aggregate for cement mortar for second coat of plaster may have the following grading:

I.S. Sieve	Percentage by Weight Passing Sieve
4.8 mm	100
2.4 mm	100
1.2 mm	75 - 100
0.6 mm	40 - 85
0.3 mm	5 - 50
0.15 mm	0 - 10

The fineness modulus shall not exceed 1.6

IS:1543-1960 shall generally apply for sand for plaster.

5.5.6.4.5 Gradation

The gradation of materials from any one source shall not vary in composition beyond the range of values that governs it, in selecting source of supply. For determining the degree of uniformity, determination of fineness modulus shall be made upon representative samples furnished by the Contractor from such source as he proposes to use. Fine aggregate from any one source having a variation in fineness modulus of the representative samples submitted by the Contractor shall be rejected or may be accepted subject to such change in the proportion of aggregate as the Engineer may direct.

5.5.6.4.6 Storage

The fine aggregate should be stacked carefully on a clean hard surface so that it will not get mixed up with deleterious foreign material. Sand shall not be stacked in high conical heaps so that segregation of heavier particles by sliding down may be prevented. It shall be placed in layers not thicker than those resulting from lorry loads dumped on the same plane.

5.5.6.4.7 Tests

The aggregates shall satisfy the tests referred to in IS:383-1952. Samples of sand to be used for a particular item shall be got approved by the Engineer, who shall keep it in his office for reference.

5.5.6.4.8 Water

Water for mixing cement mortar shall not be salty or brackish and shall be clean, reasonably clear and free from objectionable quantities of silt and traces of oil, acid and injurious alkali, salts, organic matter and other deleterious material, which will weaken the mortar. Water shall be obtained from sources approved by the Consultant. Sources of water shall be maintained at such a depth and water shall be withdrawn in such a manner as to exclude silts mud, grass or other foreign materials. Containers for transport, storage and handling of water shall be clean.

If required by the Consultant, it shall be tested by comparison with distilled water. Comparison shall be made by means of standard cement tests for soundness, time of settling and mortar strength as specified in IS:269-1958.

Any indication of unsoundness, change in time of setting by 30 minutes or more, or decrease of more than 10% in strength of mortar prepared with the water sample when compared with the results obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water tested. Seawater shall not be used.

Water fit for drinking will generally be found suitable for mixing cement mortar.

Water for curing cement mortar should not be too acidic or too alkaline. It should have a PH value ranging between 4.5 to 8.5. It should be free of elements, which significantly affect the hydration reaction or otherwise interfere with the hardening of mortar surfaces.

Hard and bitter water containing more than 100 p.p.m. of sulphates shall not be used for curing purpose.

Portable water will generally be found suitable for curing cement mortar.

5.5.6.4.9 **Proportions**

Cement and sand shall be mixed in specified proportions, sand being measured in measuring boxes. The proportions will be by volume on the basis of 50 kg. Bag of cement being equal to 35 liters (about 0.034 cu.m.) The mortar may be hand mixed or machine mixed as directed by the Engineer.

5.5.6.4.10 **Preparation**

In hand mixed mortar, cement and sand in the specified proportions shall be thoroughly mixed dry on a clean impervious platform by turning over at least 3 times or more till a homogeneous mixture of uniform color is obtained. Fresh and clean water as specified above shall be added gradually & thoroughly mixed to form a stiff plastic mass of uniform color so that each particle of sand shall be completely covered with a film of wet cement. The water cement ratio may be as under or as directed by the Engineer.

Cement	Sand	Water-Cement Ratio	Quantity of water per 50 kg of cement
1	1	0.25	12.5
1	1.5	0.28	14.0
1	2	0.30	15.0
1	2.5	0.35	17.5
1	3	0.40	20.0
1	4	0.53	26.5
1	5	0.60	30.0
1	6	0.70	35.0
1	8	0.90	45.0

Mixing platform shall be so arranged that no deleterious extraneous material shall get mixed with mortar nor the mixing water of the mortar shall flow out. Machine mixed mortar shall be prepared in an approved mixer. About 5% to 10% of mixing water shall be put into the mixer and sand & cement in the required proportions shall be then added. The remainder of water, quantity of which shall be predetermined by consideration of strength and consistency shall be added uniformly. Mixing will be continued until all particles of sand are uniformly coated with

cement paste. Mixing for 1½ to 2 minutes will normally be sufficient. Water cement ratio shall be as per hand mixed mortar.

The mortar so prepared shall be used within 30 minutes of adding water; only such quantity of mortar shall be prepared as can be used within 30 minutes. The mortar remaining unused after that period or mortar which has partially hardened or is otherwise damaged shall not be tempered or remixed. It shall be thrown away.

5.5.6.4.11 **Scaffolding**

Scaffolding required for facility of construction shall be provided by the Contractor at his own expense.

Scaffolding shall be double or single as is warranted. Scaffolding shall be erected with steel sections or pipes, so as to be safe for all construction operations. The Contractor shall take all measures to ensure the safety of the work and working people. Any instructions by the Engineer in this respect shall also be complied with. The Contractor shall be entirely responsible for any damage to property or injury to persons resulting from ill-erected scaffolding, defective ladders and materials or otherwise arising out of his default in this respect. Proper scaffolding shall be provided to allow easy approach to every part of the work. Overhead work shall not be allowed. No log holes shall be made in the wall when scaffolding is being erected. For internal / External plaster double scaffolding with steel pipes / H frames to be used.

5.5.6.4.12 **Tools and Accessories**

Tools & accessories used in plasterwork may advantageously conform to IS:1630-1960.All tools shall be cleaned by scraping and washing at the end of each day's work or after use. Metal tools shall be cleaned after each operation. All tools shall be examined to see that they are thoroughly cleaned before plastering is begun.

5.5.6.4.13 **Program of work in relation to plastering**

All general precautions as specified in IS:1661-1960, Clause 9, shall be done in IS:1661- 1960, Clause 13. Care shall be taken to see that other parts of the work or adjacent works are not damaged while plastering.

5.5.6.4.14 **Preparatory Work**

All joints in the face work that is to be plastered shall be raked out to a depth equal to not less than the width of the joints or as directed by the Engineer. The raking shall be done taking care not to allow any chipping of masonry. In new work the raking out shall be done when the mortar in the joints is green. Smooth surfaces of concrete must be suitably roughened to provide necessary bond for the plaster. All dirt, soot, oil, paint or any other material that might interfere with satisfactory bond shall be removed. The surface to be plastered shall be cleaned and scrubbed with fresh water and kept wet for 6 hours prior to plastering. Level pads, rough grounds for windows to be fixed before plastering. It shall not be commenced unless the preparatory work is passed in writing by the Engineer.

5.5.6.4.15 **Gauges**

Patches of plaster 150 mm x 150 mm (6" x 6") shall be put on about 3 m (10' –0") apart as gauges to ensure even plastering in one plane.

5.5.6.4.16 Plastering

In all plaster work, the mortar shall be firmly applied with somewhat more than the required thickness and well pressed into the joints and on the surface and rubbed and leveled with a flat wooden rule to give required thickness. Long straight edges shall be freely used to ensure a perfectly plane even surface. All corners must be finished to their true angles or rounded as directed by the Engineer. The surface shall be finished to plane or curved surfaces as shown on the drawings or as directed by the Engineer and shall present a neat appearance. The mortar shall adhere to the masonry surface intimately when set and there should be no hollow sound when struck. Plaster shall be done from top downwards.

At all the joints of concrete and brickwork or at the junction of different construction materials, 150 mm wide chicken wire mesh of 26 G thickness & 15 mm mesh size shall be used fixed after the first coat of plaster. The wire mesh will then be covered by the final coat of plaster.

5.5.6.4.17 Finishing

In any continuous face of a wall, finishing treatment of any type should be carried out continuously and day to day breaks made to coincide with architectural breaks in order to avoid unsightly junctions.

5.5.6.4.18 Moldings, Grooves, Bands etc.

These shall be worked true to template and drawn neat, clean and level. All exposed angles and junctions with doorframes etc. shall be carefully finished.

5.5.6.4.19 Watering and Curing

All plasterwork shall be kept damp continuously for a period of 14 days. To prevent excessive evaporation on the sunny or windward side of the buildings in hot, dry weather, matting or gunny bags may be hung over on the outside of the plaster in the beginning and kept moist. The fog curing of internal / external shall start within 90 minutes of completion of plastering to avoid hair cracks on plastered surface.

Should the Contractor fail to water the work to the satisfaction of the Engineer, the latter engage requisite labor, materials and equipment to water the work properly at the Cost of the Contractor.

5.5.6.4.20 Bad Work

Should the mortar of the plaster perish through neglect of watering or for any other default and if the work is not done as specified, the plaster shall be removed and redone at the Contractor's expense. It is most essential that the Contractor shall properly plan out his overall construction and finishing program in such a way as to ensure that all such plastered and form finished surfaces are completed and handed over by him free from any defects – especially from any of the following aesthetic defects: -

Smudges and stains as result of spilling of cement mortar, plaster or any other material on to the finished surfaces.

Rectification patches, which may be the result of plastered or form finished surfaces having been accidentally damaged or broken, or because of such surfaces having had to be chased or opened out after final finishing.

Even minor chipping, scratching or other forms of accidental damage to the finished surfaces, as a result of negligence or carelessness on the part of the site organization during construction.

Item to include

- Erecting, dismantling and removing the scaffolding.
- Preparing the surface to receive plaster.
- Providing cement plaster of the specified average thickness with specified number of coats.
- Any moldings, grooves, bands etc. if shown on the drawings or as specified unless separately provided in the tender.
- All labor, materials, use of tools and equipment to complete the plastering as per specifications.
- Curing

5.5.5 Oil Emulsion (Oil Bound) Washable Distempering

5.5.5.1 Materials

Oil emulsion (Oil Bound) washable distemper (IS 428) of approved brand and manufacture shall be used. The primer where used as on new work shall be cement primer or distemper primer as described in the item. These shall be of the same manufacture as distemper. The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer. Only sufficient quantity of distemper required for day's work shall be prepared.

The distemper and primer shall be brought by the contractor in sealed tins in sufficient quantities at a time to suffice for a fortnight's work, and the same shall be kept in the joint custody of the contractor and CPWP SPECIFICATIONS 2009 554 the Engineer-in- Charge. The empty tins shall not be removed from the site of work, till this item of work has been completed and passed by the Engineer-in-Charge.

Providing and applying two or more coats of plastic emulsion paint of matt finish: 50-60 micron each coat of approved brand, manufacturer and shade to give a smooth finish on new concrete surfaces over a coat of approved primer including the cost of preparing the surfaces with approved filling materials, along with sand papering wherever required, scaffolding etc. complete.

5.5.5.2 Preparation of the Surface

For new work the surface shall be thoroughly cleaned of dust, old white or color wash by washing and scrubbing. The surface shall then be allowed to dry for at least 48 hours. It shall then be sand papered to give a smooth and even surface. Any unevenness shall be made good by applying putty, made of plaster of peris mixed with water on the entire surface including filling up the undulations and then sand papering the same after it is dry.

In the case of old work, all loose pieces and scales shall be removed by sand papering. The surface shall be cleaned of all grease, dirt etc. Pitting in plaster shall be made good with plaster of peris mixed with the color to be used. The surface shall then be rubbed down again with a fine grade sand paper and made smooth. A coat of the distemper shall be applied over the patches. The patched surface shall be allowed to dry thoroughly before the regular coat of distemper is applied.

5.5.5.3 Application

5.5.5.4 Priming Coat:

The priming coat shall be with distemper primer or cement primer, as required in the description of the item. The application of the distemper primer shall be as described in 13.18.4.

Note: If the wall surface plaster has not dried completely, cement primer shall be applied before distempering the walls. But if distempering is done after the wall surface is dried completely, distemper primer shall be applied.

Oil bound distemper is not recommended to be applied, within six months of the completion of wall plaster. However, newly plastered surfaces if required to be distempered before a period of six months shall be given a coat of alkali resistant priming Paint conforming to IS 109 and allowed to dry for at least 48 hours before distempering is commenced.

For old work no primer coat is necessary.

5.5.5.5 Distemper Coat:

For new work, after the primer coat has dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub out the priming coat. All loose particles shall be dusted off after rubbing. One coat of distemper properly diluted with thinner (water or other liquid as stipulated by the manufacturer) shall be applied with brushes in horizontal strokes followed immediately by vertical ones which together constitutes one coat.

The subsequent coats shall be applied in the same way. Two or more coats of distemper as are found necessary shall be applied over the primer coat to obtain an even shade.

A time interval of at least 24 hours shall be allowed between successive coats to permit proper drying of the preceding coat. For old work the distemper shall be applied over the prepared surface in the same manner as in new work. One or more coats of distemper as are found necessary shall be applied to obtain an even and uniform shade.

15 cm double bristled distemper brushes shall be used. After each day's work, brushes shall be thoroughly washed in hot water with soap solution and hung down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.

5.5.6 CARPENTRY, JOINERY, DOORS:

5.5.9.1 Scope

The work in general shall consist of supplying and/or erecting and installing of all doors, windows, ventilators, louvers, rolling shutters, glazed partitions, etc. as shown on drawings with all materials complete including supply and fixing of glass and glazing.

The scope shall also include the assembly and erection of all doors, windows, louvers, glazed partitions, etc. Supplying and/or fixing of all door and window accessories and hardware are also included in the scope.

5.5.9.2 Applicable Codes and Specifications

The following codes, standards and specifications are made a part of this specification. All standards, specifications, codes of practices referred to herein shall be the latest edition including all applicable official amendments and revisions.

In case of discrepancy between this specification and those referred to herein, this specification shall govern.

IS: 4021	Timber door, window and ventilator frames.
IS: 2202	Wooden flush door shutters (Solid core Type) Part – I.
IS: 1003	Timber paneled and glazed shutters. (Parts I & II)
IS: 4020	Methods of tests for wooden flush doors: Type tests.
IS: 1761	Transparent sheet glass for glazing and framing purposes.
IS: 4351	Steel door frames.
IS: 1038	Steel doors, windows and ventilators.
IS: 1361	Steel windows for industrial buildings.
IS: 1081	Code of practice for fixing and glazing of metal (Steel and Aluminum) doors, windows and ventilators.
IS: 5807	Method of test for clear finishes for wooden furniture (Part I to III)
IS: 1477	Code of practice for painting of ferrous metals in buildings and allied Finishes (Part I &II)
IS: 2338	Code of practice for finishing of wood and wood-based materials (Part I).
IS: 1948	Aluminum doors windows and ventilators
IS: 1949	Aluminum windows for industrial buildings.
IS: 3548	Code of practice for glazing in building.

5.5.9.3 Woodworks:

Timber used for joinery shall be of good approved quality or Teak wood unless otherwise specified (Ref.IS:4021) and shall be well seasoned (IS:1141) cut square, of natural growth, uniform in texture, straight grained, free from excess wane, from sapwood dead knot or other defects and blemishes (Ref.IS:3364).

All timber for carpentry, joinery, rough frame work, backings, grounds, fixing strips and the like shall be treated with an approved wood preservative (Ref.IS:401) and the Contractor shall strictly observe the manufacturer's instructions for using this material. The maximum permissible moisture content in timber shall be in accordance with IS: 287-latest.

All workmanship shall be of the best quality (IS: 6534) Scantlings and boarding's shall be accurately sawn and shall be of uniform width and thickness throughout. All carpenter's work shall be left with a sawn surface except where otherwise specified. Work shall be framed together and securely fixed in the best possible manner and with properly made joints. All brads, nails, screws, plugs, pin, etc. to be provided as necessary and as directed and approved.

Timber of approved quality is to be purchased at the commencement of the contract for further seasoning on the site. The preparation of timber is to commence simultaneously with the beginning of the work generally and to proceed continuously until all the wood work is prepared and stacked on or near the site. All the timber of large scantlings is to be sawn immediately on arrival at site to allow for any shrinkage that may take place. All timber brought to site shall be given anti-termite treatment.

Joints in various members forming any timber frame shall be provided only as shown in the drawings or as directed by the Engineer. Two millimeters will be allowed for each wrought face of the sizes specified except when described as finished in which case they shall hold to the full dimensions specified.

All work is to be properly tenoned, shouldered, wedged, pinned, braded, etc. to the satisfaction of the Engineer and all properly glued with best quality glue. All joinery shall be finished off in a proper manner, planed and sand papered as required (IS: 2338).

Any joiner's work which shall be split, fracture, shrink, or show flaws or other defects due to unsoundness, inadequate seasoning or bad workmanship, shall be removed and replaced with sound material at the Contractor's expense.

Use of nails shall not be permitted. Fixing of members shall be done by using screws or round brads, heads of which shall be properly punched in ends of timbers built into walls shall have air space lest between themselves and the walls.

All exposed faces of woodwork shall be sand papered once before erection for approval of the Engineer. No color or other preservatives shall be applied without prior approval of the Engineer.

Doors, windows and ventilator frames, transoms and mullions shall be rebated. All dimensions shall be as per drawings. The top framing member of doors and top and bottom framing of windows and ventilators shall project about 150 mm in brick work. The verticals of door frames shall project about 50 mm below finished floor.

Frames for doors and windows will be provided with Mild Steel holdfasts made of 40 mm x 3mm thick flats 200 mm long and fixed into jambs M-15/10 P.C.C. 1200 mm high frames with 6 Nos and frames above 2000 mm with 8 Nos holdfasts. Each holdfast will be fixed to the frame with 3 Nos 50 mm GI screws.

The doors shall be paneled or solid flush doors as described in the item of work. All flush doors shall be supplied with approved fittings such as hinges, mortice lock of approved make with handles on sides, oxidized brass tower bolts and latch arrangements, door stops etc. and as shown in drawings but exclusive of door closer. Door closers, where separately specified shall be of heavy-duty hydraulic type to be approved by Engineer/Architect.

Doors shall generally have no sills but if a few have to be provided; the CONTRACTOR shall do so at no extra cost to the OWNER.

For fixing timber frames to concrete, raw plugs and screws of 16 gauges shall be used wherever specified. Rawle plugs and screws of gauge 16 shall also be used for fixing raw rough grounds, framing, hangers, hat hooks, curtain rails etc. Unless otherwise specified, screws used for the work shall be galvanized.

All timber surfaces coming into contact with masonry or concrete shall be given two coats of wood preservative or so lignum approved by the Engineer.

Paneled and glazed shutters, styles and rails shall be as shown in the drawing, molded and mortised together (Ref IS: 1003). The shutters shall be square and free from twist. All glazing is to be of sheet glass of selected quality and approved by the Engineer/Architect.

It shall be clear and free from defects. It shall be cut to the required size and fixed to frame either with spring clips, with approved quality, or with teakwood beading as per details.

The Engineer may order any timber frame to be put together on the ground and submitted to suitable tests to his satisfaction before being placed in position. The cost of any such test shall be borne by the Contractor.

All surfaces of timber resting on or bedded in masonry or concrete shall be well coated with coal tar.

All fixing holes shall be pelleted and concealed from view. 35 mm thick flush type block board (IS:2202) shall be manufactured from selected timber well-

seasoned and shall be of solid particle board core construction with 25 mm thick teak wood lipping all around the edge. The stiles and rails shall be of one piece or alternatively, two or more pieces glued together. The thickness of the cross band shall not be less than 3mm and the thickness of the facing shall be of best quality commercial ply thickness not less than 1.5mm. Where veneer finish, or Formica finishes or any other type is specified they shall be glued separately. All the plywood shall be glued under pressure. Glue used shall be phenol formaldehyde resins.

5.5.9.4 Flush door shutter with paint finish

Providing and fixing ISI marked flush door shutters conforming to IS:2202 (Part I) nondecorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. Flush door panel shall be 35 mm thick, with 25 mm thick teak wood lipping on all edges, including fixing with stainless steel butt hinges, screws and painting in approved color. Size and design of doors to be as per detailed door drawings. Painting shall include applying approved wood primer and 2 or more coats of paint of approved make and color.

5.5.9.4.1 Fixtures:

All doors and windows shall be provided with best quality fixtures as specified in the drawing. Samples of all fittings shall be submitted for approval by the Engineer. Unless otherwise specified, hinges, tower bolts, AL drops, handles, baby latches, etc. shall be of best quality of specified size. Mortise lock, hydraulic closer and other fixtures shall be of approved make.

5.5.9.4.2 Painting:

Painting shall be carried out only after the joinery has been inspected and approved by the Engineer. The surface preparation and applying of primer coats of paint and final coats of paint shall be carried out as per specifications for painting. Unless otherwise specified a minimum of 2 coats of primer paint and 3 coats of final paint to be applied. Where polishing or varnishing is specified, the surface to be varnished or polished shall be protected from contamination such as inadvertent painting and surface damage. The polishing or varnishing shall be according to the specifications for varnishing or polishing under the section Painting.

The contractor shall submit samples of each type of hardware to the Engineer. The approved samples shall be retained by the Engineer for comparison of bulk supply. The samples shall be returned to the Contractor towards the end for incorporation in the job. The frames shall be erected in accordance with manufacturer's instructions. The frame shall be aligned and kept plumb by suitable supporting arrangement. As the masonry is being constructed the holdfasts are embedded in concrete mix 15/10. Where required for fixing with concrete member, raw plug and GI screws shall be used. The joints between the steel frame and masonry work, after being finished with plaster shall be finished with approved bitumen mastic.

Glass panes, unless otherwise specified shall be of 6mm thickness and shall be free from flaws, specks and bubbles. It shall have properly squared corners and straight edges, and shall be fixed to frame with glazing pins and approved putty.

5.5.9.5 PVC DOOR & uPVC WINDOW MOLDED PVC DOOR (WOOD FREE)

Description: This item shall govern the provision of fabrication, supply and installation of 30 mm thick factory-mademolded PVC door (Wood free) as per drawing approved by Engineer-in-charge

General Requirement: The 30 mm thick factory-mademoldedPVC door(Wood free) shall be fabricated in accordance with design requirement anddetailed as per drawing, in conformity with the requirements of this specification.

Feature: Feature of molded PVC door are as follows:

1. 100% Water Proof
2. Dimensionally stable
3. Acid/Alkali Resistant
4. 100% Termite Proof
5. Maintenance Free
6. Flame Retardant

Fabrication description:

30 mm thick factory-mademolded PVC door (Wood free) consisting of frame made out of M.S. tubes of 19-gauge thickness and size of 20 mm x 40 mm for stiles as well as top, bottom & lock rail. M.S. frame shall have a coat of metal primer of approved make & manufacturer. The inside panel shall consist of 20 mm thick multi-chamber hollow PVC section of 1mm wall thickness, bonded using solvent cement / cyanoacrylate adhesive with 5 mm (+0.25) thick molded PVC sheet of density 600 kg/cbm with 2, 4, 6 raised panel

deign in plain / prelimcolors after routing the molded design on one side of the inside panel. 5 mm (+0.25) plain / prelim PVC sheet to be pasted using solvent cement / cyanoacrylate adhesive on other side of the hollow PVC section.

All the four edge of the panel to be sealed with lipping of 10 mm thick & 20 mm wide PVC sheet baton made by sticking 2 nos. foam PVC sheets of 5 mm (+0.25) thickness using PVC solvent cement adhesive. Door edge lipping to be painted with PVC ink of matching color of Plain/Prelimmolded PVC sheet of door 20 mm thick (5 mm x 4 nos.) thick PVC sheet to be given for lock provision at lock height. Door to be fixed with frame with 3 nos. stainless steel butt hinges of size 100 mm x 25 mm x 2mm and 50 mm long steel screws drilled suitable to pass through both the walls of the M.S. tube other hardware should be fixed with 25 mm x 8 mm size steel screws etc., complete as per manufacturer's specification and drawing or direction of Engineer-in-charge. Finish: All the surface of molded PVC door (Wood free) should be uniform smooth finish and free from crack and seam. Passing joints shall be finished ensuring that no gaps are visible.

Tolerance: All Dimensions (except thickness of profile sections) shall be as perdrawing ±0.25mm.

Test: Molded PVC door shall be subjected to the following test: -

Edge Loading Test as per IS 4020 Part 7

Slamming test as per IS 4020 Part 10

Shocking resistant test for soft body and heavy body as per IS 4020 Part 8

Measurement: The unit of measurement shall be in square meter.

5.5.9.6 General Steel Door:

Fixing 50 mm thick steel door shutter with double skinned with 0.8 mm (22 gauge) galvanized steel sheets (bending radius 1.2) mm spangle free of size to fit the above frame, stressed-skin design, (no visible joint on faces), lock seam joint (without any visible weld joints on the vertical edges also) and flush top with inverted channel; and with paper honey-comb infill bonded to the skin with PU/Co-polymer resins, pre-punched /pre-drilled to receive ironmongery as per the manufacturer specification. Suitable reinforcement is to be provided in the door shutter to receive the hardware and hardware to be fixed on the door including vision panel fasteners. The doors with double shutters are to be

provided with astragals on both sides & astragals to be fitted to the door without any fasteners. The shutter to be fixed with SS hinges 304 grades (size 100x75x3mm). The door frame (section size 143x57) will be made from 1.6mm thick GI steel /GP steel pressed to double rebate profile for better structural strength. Frames are to be fixed with fasteners.

1. **GI – Sheet**

   GI-Sheets 1.6mm /120 gsm of Zinc Coating plus 40 micron of Primer / 40 micron of finish paints or powder coating upto 80 Micron, having 3 mm thick base plate and duly reinforced; pre-machined for receiving latch/lock; with recessed pre-drilled 3 mm hinge plates, Ready-to-receive specified hardware/ironmongery, to be supplied in CKD condition & to be jointed at site Butt & bolted as per kitty design.

2. **Handling and Storage of Fabricated Materials**

   All doors, windows, etc. shall be packed and crated properly before dispatch, to ensure that there shall be no damage to the fabricated materials. Loading into wagons and trucks shall be done with all care to ensure safe delivery of materials at site in undamaged condition.

   While taking delivery of items supplied by Owner, the Contractor shall satisfy himself that the items supplied are upto the specified standard. Any defect detected shall promptly be brought to the notice of the Engineer.

   All doors, windows etc. shall be stored under cover in a way to prevent damage or distortion. Special care shall be taken to prevent staining of aluminum products by rust, mortar etc.

3. **Assembly & Erection at Site**

   In general, the fixing of steel doors, windows, ventilators, louvers, etc. shall conform to IS: 1081 and as shown on drawings. The contractor shall assemble and install all steel doors. Sashes, fixed metal louvers etc. including transoms and mullions for composite units in respective places as shown on drawings, keeping proper lines and levels, and in approved workmanship manner, to give trouble free and leak-proof installations. The installation shall be done according to the instructions of the manufacturer, and/or as approved by the Engineer. If required by the Engineer, the installation shall be carried out under the supervision of the manufacturer's representative. The contractor shall take every precaution against damage of the components during installation. Necessary holes, chases, etc. required for fixing shall be made by the Contractor and made good again as per original, after installation, without any extra charge. After installation of steel doors all abrasions to shop-coat of paint shall be retouched and made good with the same quality of paint used in shop coat.

   All coupling mullions, transoms, frame, etc. in contact with adjacent steel and other members, shall be well bedded in mastic. The Contractor shall bring to the site the mastic cement in original sealed containers of manufacturer and shall apply it as per the instructions. For all frames supplied by either the Owner or the contractor, mastic shall be supplied by the Contractor and caulking done properly as per drawings, Specifications and as per instructions of the Engineer. Door shutters partition hardware fixtures etc. shall be fixed only after major equipment has been installed in rooms. Wherever required, nylon cords of approved quality shall be supplied along with pivoted sashes and shall be of adequate length to terminate one meter from the floor. Loose ends of cards shall end in metal or plastic pull as approved by the Engineer.

4. **Acceptance Criteria**

- **For Fabricated Items**

  Overall dimensions shall be within +/-1 1.5mmof the size shown on drawings.

  Mullions, transoms etc. shall be in one length and permissible deviations from straightness shall be limited to + / - 1.5 mm from the axis of the member.

  Door and window shutters shall open without jamming. The clearance at heat and jamb for door shutters shall not exceed 1.5 mm. For double leaf doors, the gap at the meeting stiles shall not be more than 1.5 mm.

  Door leaves shall be undercut where shown on drawings.

  Doors, windows, frames etc. shall be on a true plane, free from warp or buckle.

  All welds shall be dressed flush on exposed and contact surfaces.

  Correctness of location and smoothness of operation of all shop installed hardware and fixtures.

  Provision for hardware and fixtures to be installed at site.

  Glazing beads shall be cut with mitered corners.

  Glazing clips, fixing devices etc. shall be supplied in adequate numbers.

  Shop coats shall be properly applied.

  Exposed aluminum surface shall be free from scratches, stains and discoloration;

  Anodized surfaces shall present a uniform and pleasing look.

- **For Installed Items**

  Installations shall be at correct location, elevation an in general on a true vertical plane.

  Fixing details shall be strictly as shown on drawings.

  Assembly of composite units shall be strictly as per drawings, with mastic caulking attransoms and mullions, gaskets, weather strips etc. complete.

  All frames on external walls shall be sealed with polycopid or mastic caulked toprevent leakage through joint between frames and masonry.

  All openable sections shall operate smoothly without jamming.

  Locks, fasteners etc. shall be unique (one to one) positively. Keys shall be noninterchangeable.

  Cutting to concrete or masonry shall be made good and all abrasions to shop paint shallbe touched up with paint of same quality as shop paint.

  Aluminum doors, windows etc. shall be free from scratches, stain or discoloration.

  Hinges, Tower bolts, locks.

  Hard ware shall include handle pull / push indicator plates etc., as specified.

- **Information to Be Submitted with Tender**

  Names of manufacturers for doors, windows etc.

  Manufacturer's catalogue for all hardware and fixture proposed to be used.

a) **After Award**

Before starting fabrication of all metal doors, windows etc. the Contractor shall submit detailed fabrication drawings to the Engineer for approval. The fabrication shall be started only after approval of drawings.

Before bulk supply, he shall submit for the approval of the Engineer, samples of all bought out items and samples of each type of fabricated item. The samples shall be retained by the Engineer for comparison of bulk

supply and returned to the Contractor towards the end for the final incorporation in the job.

5. **Rates**

Shall be unit rates for items described in schedule.

5.5.11.1 Integral Cement Based Treatment for Water Proofing on Horizontal

A. Preparation of Surface

The Water Proofing Treatment over the lean concrete/levelling course surface should adhere to the surface firmly, the surface of levelling course should be roughened properly when the concrete is still green. In case the surface is not made rough before the concrete is set, the work of water proofing should not be executed till proper key is provided for the base layer of Cement Mortar 1:3.

B. Blending Cement/Water with Water Proofing Compound

The required quantity of cement bags to be used for a particular portion of work should be emptied on a dry platform. Water proofing compound bearing ISI mark and conforming to IS 2645 should then be mixed properly with the cement. The quantity of water proofing compound to be mixed should be as prescribed by the manufacturer but not exceeding 3% by weight of cement. The quantity of cement and water proofing compound thus mixed should be thoroughly blended and the blended cement should again be packed in bags.

For the water proofing compound in liquid form, the blending is to be done with water. This can be done by taking the just required quantity of water to be mixed in the particular batch of dry cement mortar.

The required quantity of water thus collected per batch of dry cement mortar to be prepared should be mixed with liquid water proofing compound from sealed tins with ISI mark. The water thus mixed with water proofing compound shall be thoroughly stirred so that the water is blended with water proofing compound properly.

C. Laying Water Proofing Course

Before laying the base course of cement mortar 1:3, the lean concrete surface shall be cleaned neatly with water. Cement slurry. (ii), shall be applied only on the area of the concrete surface, that can be covered with the cement mortar (1:3) base course within half an hour. The cement slurry should cover every spot of the surface and no place shall remain uncovered. Just after the application of cement slurry on the surface, the cement mortar prepared as per clause 5.6.11.2.1 (v) should be used for laying the base course. Base Course should be laid to a perfect level with wooden/aluminum straight edge of at least 2 mtrs. long. The top surface of cement mortar should be finished neatly and later scratched when green with a suitable instrument before the base course dries and gets hard that is just before the base course takes up initial set. When the 25-mm thick base course is just getting set the cement slurry prepared as per clause 5.6.11.2.1 (iv) should be spread over the base course up to the area that shall be covered with just two to three stone slabs. The cement slurry shall be spread in such a way that the area of base course to be covered immediately shall be covered with slurry without any gap or dry spots. Immediately on applying cement slurry on the base course the Rough Kota Stone slab shall be laid over the base course and pressed gently so that the air gap can be removed.

The slurry applied on the surface which gets spread when the stone slab is pressed shall get accumulated in the joints of adjacent stone slabs and if any gap still remains between the stone slabs the same should also be filled with additional quantity of cement slurry. For laying the stone slabs in perfect level, two stone slabs at adjacent concerns/ends shall be fixed firmly to the required level and a string stretched over the two slabs, the intermediate slabs shall then be set to the level of the string.

D. Curing

Immediately after completing the fourth layer, arrangements shall be made for the top RCC slab as quickly as possible and in the meantime till the top slab is casted the water proofing treatment shall be kept wet continuously. In case the concreting of slab gets delayed for more than 2 weeks the curing can be stopped after 14 days.

E. Measurement

Length and breadth shall be measured along the finished surface correct to a cm and the area shall be worked out to nearest 0.01 sqm.

F. Rate

The rate shall include the cost of all labour & materials involved in all the operations described above. The cost of grading with cement concrete / cement mortar shall be paid for separately.

5.5.11.2 **<u>Water Proofing Treatment to Vertical and Horizontal Surface of Depressed Portion of WC, Kitchen and The Like</u>**

1) Before the Water Proofing Treatment

Before the water proofing treatment, the internal plaster of ceiling and walls of WC block leaving the portion for dado/skirting should be completed. Grooving / chasing for doing the concealed work of GI/CI pipes/Electrical conduits should be completed. Cleaning the depressed/sunken portion of WC of all debris, extra mortar sticking to the vertical and horizontal surface etc. Necessary holes for 'P' trap /Nhani trap/Water escape pipe etc. should be completed.

2) **Preparing Surface and Fixing Pipes and Fittings**

Before the water proofing treatment work, proper key in the concrete surface should be provided. The depressed/sunken portion should be hacked by a hacking tool, after the concrete slab is cast and when this concrete is still green. The vertical surfaces of the depressed /sunken portion should be hacked with a hacking tool just after the shuttering is removed. In case of old work, the water proofing treatment on such surfaces shall be permitted after making proper spatter dash key. Fixing the 'P' trap in position and all other pipes work including the water escape pipe shall be fixed properly and the holes should be plugged carefully before taking up the water proofing work.

- **1st Course**

  Cement duly blended with water proofing compound as explained shall be used for preparing the cement slurry.

  The consistency of the slurry should be such that 4.4 kg. of blended cement with water proofing compound is used per sq. meter area of surface to be treated. The slurry should be started from the vertical faces towards the bottom of the floor. Particular care should be taken to see that the slurry is applied to corners without leaving any gap.

- **2nd Course**

  Immediately on applying the blended cement slurry on the surface to be treated cement plaster 20 mm thick in CM 1:3 (1 blended cement: 3 coarse

sand) shall be applied both on vertical and horizontal surfaces taking particular care to complete the entire depressed/ sunken portion of WC within a day so that the plaster can be done without any joint. Junctions shall be properly rounded. The surfaces of the plaster shall be left rough but finished in one plain and cured for a week.

On completion of the curing period both horizontal and vertical surfaces shall be cleaned properly and gently and allowed to dry.

- **3rd Course**

  Only after the surface is completely dried the blown or residual bitumen shall be applied @ 1.7 kg. of bitumen per sqm area.

- **4th Course**

  PVC sheet 400 micron thick shall be spread evenly without any kink immediately, so that the PVC sheet sticks to the surface firmly. PVC sheet shall be continued to be laid over the main slab up to 100 mm.

  Overlapping of PVC sheet should be done with a minimum overlap of 100 mm, duly pasting the overlapped sheet with an application of bitumen @ 1.7 kg. / sqm.

  The projections of pipes and 'P' trap outlet etc. inside the depressed/sunken portion of WC shall also be cladded with water proofing treatment layer up to a height of 150 mm, using a coat of bitumen with PVC sheet complete.

  The surfaces of depressed/sunken portion of WC shall not be left without covering with specified filling material and base concrete, otherwise the PVC sheet layer may be tampered by the labour working in the vicinity.

  Fixing up of WC pan, filling specified material and the top base concrete should be done as early as possible and the top horizontal layer of water proofing may be taken up later i.e. just before laying the floor tiles.

3) **Measurement**

   Length and breadth shall be measured along the finished surface correct to a cm. and area shall be worked out to nearest 0.01 sqm. No payment however shall be made for the 100 mm overlap of PVC Sheet over the roof slab.

4) **Rate**

   The rate shall include the cost of labour and materials involved in all the operations described above.

5.5.7 FLOORING / ALLIED WORK

5.5.12.1 Scope

This specification covers furnishing, installation, finishing, curing, testing, protection, maintenance till handing over various types of floor finishes and allied items (trades, risers, sills, cladding, daddo etc.) of work as listed below:

5.5.12.2 Applicable Codes

IS:269 Specification for ordinary and Low Heat Portland Cement

IS:383 Specification for Coarse and Fine Aggregates

IS:1237 Specification for Cement Concrete Flooring Tiles

IS:1443 Code of Practice for Laying and Finishing of Cement Concrete Flooring Tiles

IS: 2571 Code of Practice for Laying In-situ Cement Concrete Flooring Tiles

IS: 457 Specification for Ceramic Unglazed Vitreous Acid Resisting Tiles

IS: 2114 Code of Practice for laying in situ Terrazzo Floor Finish

IS: 4860 Specification for Acid Resistant Bricks

IS: 5491 Code of Practice for laying in situ Granolithic Floor Topping

5.5.12.3 Vitrified Titles in Flooring / Skirting

The base shall be cleaned and the bedding mortar 20 mm to 25 mm shall be laid. A neat cement grout shall be spread before laying tiles. The tiles shall be cured for 5 days. The joints shall be filled with cement slurry tinted to match the colour of tiles. For fixing the tiles in skirting the bedding mortar shall be 12 mm. The tiles shall conform to relevant I.S. code. The contractor shall produce test certificate for the tiles.

5.5.12.4 Garda Stone from Buddhpura (Polished/ flamed/ leatheredfinish), Granite, Marble Stone Flooring, Skirting and Facing:

5.5.12.4.1 Materials

Stones shall be of the best variety to be approved by the Engineer and shall be of specified thickness and size.

The stone slabs shall be sound, durable and uniform in size, thickness and color. They shall be free from soft veins, cracks or flaws and their edges shall be true and square and shall be machine cut and the surface double machine polished, if require as per item description. Sorting of stones of one-color shade shall be done prior to fixing to avoid color variation in the work.

5.5.12.4.2 Workmanship

The surface on which the stone slabs to be laid shall be cleaned of all dust and saturated with water.

The stone slabs shall be set in cement slurry over 20 mm thick lime mortar 1:2/cement mortar 1:4 bedding and tamped with wooden mallet. The joints shall be flushed with cement and cured for 7 days.

The final cutting / polishing shall be done as directed after the completion of curing period.

5.5.12.5 Marble / Granite Flooring, Skirting & Facing

5.5.12.5.1 Materials

Marble slabs shall be of the type mentioned in the item and of the color and quality approved by the Engineer. Slabs shall be hard, dense, uniform and homogenous in texture. They shall have even crystallizing grain and be free from defects and cracks.

The surface shall be machine polished to an even and perfectly plain surface and edges machine cut, true and square.

No slab shall be thinner than the specified thickness at its thinnest part. The dimensions of the slab shall be as specified in item. A few specimens of the finished slabs shall be deposited by the Contractor in the Engineer's office for reference.

5.5.12.5.2 Workmanship

They shall be laid to the pattern shown in the drawings or as directed by the Engineer.

The surface on which the marble / Granite slab is to be laid shall be cleaned of all dust and saturated with water.

The marble slabs shall be set in cement slurry over 20mm thick lime / cement mortar 1:1:2 bedding and tamped with wooden mallet. The joints shall not exceed 1 mm in thickness and shall be flushed with white cement and cured for 10 days.

Finishing shall be done as per IS:2114-1962. Normally polishing shall be done for flooring by machine. Hand polishing shall be allowed only for skirting and facing. A smooth polish shall be obtained in either case to the entire satisfaction of the Engineer.

5.5.12.6 Trimix Concrete Flooring

Trimix concrete is a method of producing high wear resistant & high compressive strength concrete minimizing water permeability & dusting.

The specification of work should conform to those specified by the manufacturer, as to achieve the desired results but in no case, shall be lesser than as mentioned hereunder

5.5.12.6.1 Concrete in floor

The surface where the trimix concrete method of laying the floor is to be adopted, shall be thoroughly cleaned of all dust, loose particles etc. It shall then be wetted to have just a moist surface & sprinkled with cement slurry. Then two side track rails on which leveling beam & a surface vibrator be mounted, shall be erected to proper/desired levels & gradient as to have the specified thickness of concrete. A stop ends then be placed at the starting end. Both track rails & stop ends should be preferably of mild steel. The concreting then be started with desired/specified grade of concrete. However, it is advisable to use M20 grade concrete minimum for better final results. The placing of machine mixed concrete begins from starting end & is continued to horizontal manner. Poker vibrators will be used to vibrate the laid concrete thoroughly with minimum 50 mm dia. needles. On completion of laying of approximate 5/6 m2 area the surface vibrator then be run over the concrete surface to achieve better overall compaction of concrete. This process is continued & the surface vibrator be run the second time along with leveling beam on the finished concrete surface.

Then the vacuum mat be placed on this leveled concrete & the excess water from the concrete is sucked off. A time of approximate 1.5 to 2.0 minutes per centimeter thickness of concrete slab is normally adopted for vacuum treatment. However, care to be taken at this stage is curling at ends due to excess use of vacuum mats. Immediately thereafter normal floating operation should begin or if special topping is specified then the same is worked into the concrete surface with the float disc. The floater suggested here are power operated skin floaters. The floating is continued till desired finish is obtained. The curing of the surface shall be done by ponding method for at least 15 clear days prior to putting the surface to use M.S. reinforcement 8 dia. at 250 mm c/c both ways shall be placed in concrete approx. 50 mm below the top surface of concrete. This mesh shall be for individual panels formed by side construction joint & expansion joint.

5.5.12.6.2 Joints in floor and sealing

i. The Construction joints in concrete shall be spaced at approx. 40 m2 area and /or as per item & will be made by sawing the already laid & finally cured concrete to obtain 3 mm to 4 mm by 30 mm to 40 mm deep joints. These joints shall be cleaned of all dust & be filled in with clear sand 3 mm by 26 mm to 36 mm deep & then the top be sealed properly by polysulphide joint sealant approx. 3 mm to 4 mm by 4 mm deep.

ii. The Expansion joints shall be spaced at approx. 120 m2 area and/or as per item & shall constitute formation of 20 mm to 25 mm clear joint between the two concrete. This joint be formed by placing the Shalitex board in position against the old concrete leaving 20 mm x 10 mm joint at top, which shall be filled in by polysulphide joint sealant.

5.5.12.6.3 HEAT RESISTANCE ON COMPLETE TERRACE& PORCH

5.5.12..7 FALSE CEILING /

i. Different type of ceiling tiles shall have smooth laminated visual with Humidity Resistance (RH) of 95%, NRC 0.85 – 0.95 (Average value of Absorption Co-efficient readings taken at 250 Hz, 500 Hz, 1000 Hz and 2000 Hz) as per ASTM C423 standard, , Light Reflectance ≥85% as per ASTM E-1477, Colour Black, Fire Performance of Class 0/1 as per BS 476 Part 6/7 complete in all respect as per direction given by the Engineer-In-Charge.

5.5.8 QUALITY ASSURANCE & QUALITY CONTROL

Testing of all materials and works as mentioned in the JDA/PWD publications or stipulated in the codes or as directed by the Engineer shall be carried out by the Contractor and test reports shall be submitted regularly to the Engineer for his perusal. The Contractor is to notify the Engineer the program of such tests well in advance, so that such tests, either conducted in his own laboratory, laboratory established at the site or any accredited laboratory or at Manufacturer's place can be witnessed by him / his representative or Third Party, if appointed by the Procuring Entity. Also establish an office for uses of client at site.

The Contractor is to abide by the stipulations/clauses appearing in the QA & QC Manual published by the JDA/PWD.

SECTION-IV

SCOPE & SPECIFICATIONS_HVAC WORKS

SPECIAL CONDITIONS

1. *GENERAL*

These special conditions are intended to amplify the General Conditions of Contract, and shall be read in conjunction with the same. For any discrepancies between the General Conditions and these Special Conditions, the more stringent shall apply.

2. *SCOPE OF WORK*

The general character and the scope of work to be carried out under this contract is illustrated in Drawings, Specifications and Schedule of Quantities. The Tendered shall carry out and complete the said work under this contract in every respect in conformity with the contract documents and with the direction of and to the satisfaction of the Owner's site representative. The tendered shall furnish all labor, materials and equipment (except those to be supplied by the OWNER) as listed under Schedule of Quantities and specified otherwise, transportation and incidental necessary for supply, installation, testing and commissioning of the complete **HVAC system** as described in the Specifications and as shown on the drawings. This also includes any material, equipment, appliances and incidental work not specifically mentioned herein or noted on the Drawings /Documents as being furnished or installed, but which are necessary and customary to be performed under this contract. The Internal **HVAC System** shall comprise of following:

a. Complete Air **Conditioning work.**
b. Approval from Consultant.
c. Testing & commissioning of **HVAC Work.**
d. List of recommended spares, as installed drawings, operation & maintenance manual for the entire system.
e. Training of Owner's staff.

3. *ASSOCIATED CIVIL WORKS*

Following civil works associated with **HVAC Work** installation are excluded from the scope of this contract. These shall be executed by other agencies in accordance with approved shop drawings and under direct supervision of the **HVAC** tenderer .-

a. RCC foundation with angle iron frame work at the edges to protect these from damage.

4. *ASSOCIATED SERVICES WORKS*

All associated HVAC **Works** listed are excluded from the scope of this contract. These shall be installed by other agencies in accordance with approved shop drawings, and under direct supervision of the HVAC tendered.

5. *PROJECT EXECUTION AND MANAGEMENT*

The Tenderer shall ensure that planning and erection person from his organisation are assigned exclusively for this project. They shall have minimum 10 years experience in this type of installation. The Tenderer shall appoint one Project Manager holding senior management position in the organisation. He shall be assisted on full time basis by a minimum of one erection engineer & one senior supervisor. The entire staff shall be posted at site on full time basis.
The project management shall be through modern technique. The Tenderer's office at site shall be fully equipped with fax, modem, computers, plotter and photocopier.

Erection engineer and supervisors shall be provided with mobile communication system so that they can always be reached.
For quality control & monitoring of workmanship, tenderer shall assign at least one full-time engineer who would be exclusively responsible for ensuring strict quality control, adherance to specifications and ensuring top class workmanship for the installation.
The Tenderer shall arrange to have mechanised & modern facilities of transporting material to place of installation for speedy execution of work.

6. *GUARANTEE FOR PERFORMANCE OF INSTALLED SYSTEMS*

The tenderer shall carry out the work in accordance with the Drawings, Specifications, and other documents forming part of the Contract. The Schedule of Quantity is indicative only.
The tenderer shall be fully responsible for the performance of the selected equipment (installed by him) at the specified parameters and for the efficiency of the installation to deliver the required end result.
The tenderer shall guarantee that the system as installed shall maintain the design conditions as described under "Basis of Design" and relevant clauses in the specifications. The guarantee shall be submitted in the Performa given in Appendix-II.
Complete set of architectural services drawings is available in the Services Consultant/ office and reference may be made to same for any details or information. The tenderer shall also guarantee that the performance of various equipments individually, shall not be less than the quoted capacity; also actual power consumption shall not exceed the quoted rating, during testing and commissioning, handing over and guarantee period.

7. *INSPECTION AND TESTING*

Representatives of the Purchaser shall have free access to vendor's works to inspect, expedite and witness shop tests. Any materials or work found to be defective or which does not meet the requirement of the specification will be rejected and shall be replaced at supplier's cost.
Purchaser reserves the right to carry out stage wise inspection of fabrication, painting and components.
Tests shall be carried out on various equipment / components mounted on the Panel as per relevant Indian Standard Specifications:
That the equipment installed complies with specification in all respects and is of the correct rating for the duty and site conditions.

That all items operate efficiently and quietly to meet the specified requirments. That all HVAC circuits are correctly protected and that protective devices are properly coordinated.
The contractor shall provide all necessary instruments and labour for testing, shall make adequate records of test procedures and readings, shall repeat any tests requested by the Services Consultant/ and shall provide test certificate signed by a properly authorized person. Such test shall be conducted on all materials and equipments and tests on completed work as called for by the Services Consultant/ at contractor's expenses unless otherwise called for.
If it is proved that the installation or part thereof is not satisfactorily carried out, then the contractor shall be liable for the rectification and retesting of the same as called for by the Services Consultant/Client/ Project Manager whose decision as to what constitutes a satisfactory test shall be final.

The above general requirements as to testing shall be read in conjunction with any particular requirements specified elsewhere. All tests shall be carried out by a test house approved by the Services Consultant/Client/ Project Manager.

8. ***BYE-LAWS AND REGULATIONS***

The installation shall be in conformity with the Bye-laws, Regulations and Standards of IBR & the local authorities concerned, in so far as these become applicable to the installation. But if these Specifications and Drawings call for a higher standard of materials and / or workmanship than those required by any of the above regulations and standards, then these Specifications and Drawings shall take precedence over the said regulations and standards. However, if the Drawings and specifications violate the Bye-laws and Regulations, then the same shall be brought to the notice of the Owners and Consultant and no installation should be carried out violating the Bye-Laws and Regulations.

9. ***FEES AND PERMITS***

The tenderer shall obtain all permits/ licenses approvals and pay for any and all fees required for the inspection, approval and commissioning of their installation from concerned statutory authorities.However, all statutory fees/ amount deposited by contractor shall be reimbursed on production of proof of payment.

10. ***INFORMATION / DATA / DRAWINGS***

All HVAC Drawings listed under Appendix-I, issued with tenders, are diagrammatic only and indicate arrangement of various systems and the extent of work covered in the contract. These Drawings indicate the points of supply and of termination of services and broadly suggest the routes to be followed. Under no circumstances shall dimensions be scaled from these Drawings.

Data/Documents to be Submitted for Approval before Commencement of Work

a. Drawing with part description and overall dimensions including weight of the assembly.

b. Deviation to the specification if any. Absence of list of deviations shall be construed as compliance of specification in to.

c. Bill of materials with make, type, model, range/rating etc. with technical literature from manufacturer.

d. Quality assurance plan.

Documents before Dispatch for Erection/ Maintenance (4 copies each)

e. Installation, operation and maintenance manuals.

f. Relay coordination curves and relay setting charts.

g. Bill of materials giving details for internal and external wiring.

h. Internal inspections & acceptance reports.

i. Test & Guarantee certificates.

j. Technical catalogues of all bought outs.

k. Instructions manuals
l. Warranty certificates for batteries

11. *TECHNICAL DATA*

Each tenderer shall submit along with his tender, the technical data for all items listed in Appendix-IV in the indicated format. Failure to furnish complete technical data with tenders may result in summary rejection of the tender.

12. *SUBMITTALS*

The tenderer shall within four weeks of award, shall submit a list of HVAC drawings to be prepared by them and its submission schedule to Services Consultant.

All HVAC network drawings shall be prepared on computer through Autocad System based on Architectural Services Drawings, site measurements and Interior Designer's Drawings. Within four weeks of the award of the contract, tenderer shall furnish, for the approval of the Services Consultant, two sets of detailed drawings of all equipment and materials including layouts for HVAC inside/outside Plans, VRV sld, internal HVAC Detail Drawings, Copper Pipes Network Drawings with Sizes, Duct Plans and shall coordinate with Services Consultant/ and get the shop drawings finally approved for Services Consultant.

These drawings shall contain all information required to complete the Project as per specifications and as required by the Services Consultant/ site representative. These Drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipment, also the details of all related items of work by other tenderers. Each drawing shall contain tabulation of all measurable items of equipment/materials/works and progressive cumulative totals from other related drawings to arrive at a variation-in-quantity statement at the completion of all shop drawings. Minimum 12 sets of drawings shall be submitted after final approval along with floppy / CD.

Each item of equipment/material proposed shall be a standard catalogue product of an established manufacturer strictly from the manufacturers listed in Appendix-III and quoted by the tenderer in technical data part of Appendix-IV.

When the Services Consultant/ makes any amendments in the above drawings, the tenderer shall supply two fresh sets of drawings with the amendments duly incorporated along with checks prints, for approval Services Consultant. The tenderer shall submit further twelve sets of drawings to the Services Consultant/ site representative for the exclusive use by the Services Consultant/ and all other agencies. No material or equipment may be delivered or installed at the job site until the tenderer has in his possession, the approved HVAC drawing for the particular material/equipment/installation.

drawings shall be submitted for approval four weeks in advance of planned delivery and installation of any material to allow Services Consultant 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 HVAC drawings at the right time, in accordance with the approved programme.

Manufacturers drawings, catalogues, pamplets and other documents submitted Services Consultant for approval shall be in four sets. 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.

Samples of all materials & technical Specification like ODU, IDU Insulations Sheets, GI Sheets, Grill, Diffusers, Copper Pipes, Supports, rods, Dampers etc shall be submitted to the Services Consultant prior to procurement. These will be submitted in four sets for approval, two sets of approved samples shall be kept in Services Consultant/ site office for reference and verification till the completion of the Project. Wherever directed a mockup or sample installation shall be carried out for approval of Services Consultant/ before proceeding for further installation.

The contractor shall get the above submittal from Services Consultant and approved submittals are fially submitted for use in the work.

Approval of shop drawings and other submittals shall not be considered as a guava ntee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings super cede the contract requirements, nor does it in any way relieve the tenderer of the responsibility or requirement to furnish material and perform work as required by the contract.

Where the tenderer proposes to use an item of equipment, other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundation, wiring or any other part of HVAC or architectural layouts; all such re-design, and all new drawings and detailing required therefore, shall be prepared by the tenderer at his own expense and gotten approved by the Services Consultant/. Any delay on such account shall be at the cost of and consequence of the Tenderer.

Where the work of the tenderer has to be installed in close proximity to, or will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Services Consultant/, the tenderer 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 Tenderer 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 Owner.

Within four weeks of approval of all the relevant drawings, the tenderer shall submit four copies of a comprehensive variation in quantity statement, and itemized price list of recommended (by manufacturers) imported and local spare parts and tools, covering all equipment and materials in this contract. The Services Consultant/ shall make recommendation to Owner for acceptance of anticipated variation in contract amounts and also advise Owner to initiate action for procurement of spare parts and tools at the completion of project.

Within four weeks of award, the tenderer shall submit construction program and delivery schedule of equipment to Services Consultant and get their approval and finally submit for use in the work.

13. *QUIET OPERATION AND VIBRATION ISOLATION*

All equipment shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Services Consultant/. In case

of rotating machinery sound or vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, shall be considered objectionable. Such conditions shall be corrected by the Tenderer at his own expense. The tenderer shall guarantee that the equipment installed shall maintain the desired NC levels.

14. *ACCESSIBILITY*

The Tenderer shall verify the sufficiency of the size of the shaft openings, clearances in cavity walls and suspended ceilings for proper installation of his piping and other ancillaries. His failure to communicate insufficiency of any of the above shall constitute his acceptance of sufficiency of the same. The Tenderer shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. The exact location and size of all access panels, shall be finalized and communicated in sufficient time, to be provided in the normal course of work. Failing this, the Tenderer shall make all the necessary repairs and changes at his own expense. Access panel shall be standardized for each piece of equipment /device / accessory and shall be clearly nomenclature / marked.

15. *MATERIALS AND EQUIPMENT*

All materials and equipment shall conform to the relevant Indian Standards and shall be of the approved make and design. Makes shall be strictly in conformity with list of approved manufacturers as per Appendix-III.

16. *MANUFACTURERS INSTRUCTIONS*

Where manufacturer has furnished specific instructions, relating to the material and equipment used in this project, covering points not specifically mentioned in these documents, such instructions shall be followed in all cases.

17. *COMPLETION CERTIFICATE FOR INSTALLATION*

On completion of the HVAC installation system, a certificate shall be furnished by the tenderer, counter signed by the licensed supervisor, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local authority.

The tenderer shall be responsible for getting the entire HVAC installation duly approved by the local authorities concerned, and shall bear expenses if any, in connection with the same.

18. *TESTING AND COMMISSIONING*

Testing and commissioning of the systems and all tests as called for the Specifications shall be carried out by the tenderer through a specialist group, in accordance with the Specifications. Performance test shall consist of three days of 10 hour each operation of system for each season. Cost of performance witness test of major equipment such as VRV ODU, IDU. DUCT WORK , COPPER PIPES etc. at factory with three person from Owner / Consultant /Project Manager shall be included.

The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Services Consultant/. All tests shall be

carried out in the presence of the representatives of the Services Consultant/Owner/ Project Manager.

19. *AUTHORITY APPRVOAL*

System shall be installed as per the requirement and regulations and contractor shall be responsible for obtaining all approvals from HVAC Department and other authorities like Explosive Department, Pollution Control Board and any other statutory bodies. Only receipted amount shall be reimbursed on proof of payment.

20. *COMPLETION DRAWINGS*

Tenderer shall periodically submitt completion drawings as and when work in all respects is completed in a particular area. These drawings shall be submitted in the form of two sets of floppies / CD's and four portfolios (300 x 450 mm) each containing complete set of drawings on approved scale indicating the work as-installed. These drawings shall clearly indicate complete HVAC layouts, location of wiring and sequencing of automatic controls and other services. Each portfolio shall also contain consolidated control diagrams and technical literature on all controls.

21. *OPERATING INSTRUCTION & MAINTENANCE MANUAL*

Upon completion and commissioning of HVAC Work the tenderer shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, by Services Consultant the tenderer shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; keys, guarantees/warranties one each for retention by Services Consultant & and two for Owners Operating Personnel. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 4 year period of maintenance of each equipment.

22. *ON SITE TRAINING*

Upon completion of all work and all tests, the Tenderer shall furnish necessary operators, labour and helpers for operating the entire installation for a period of thirty (30) working days of ten (10) hours each, to enable the Owner's staff to get acquainted with the operation of the system. During this period, the tenderer shall train the Owner's personnel in the operation, adjustment and maintenance of all equipment installed. The cost of "ON SITE TRAINING" shall deem to be included in the contractor's quoted rates.

23. *MAINTENANCE DURING DEFECTS LIABILITY PERIOD*

COMPLAINTS

The Tenderer shall receive calls for any and all problems experienced in the operation of the system under this contract, attend to these within 2 hours of receiving the complaints and shall take steps to immediately correct any deficiencies that may exist.

REPAIRS

All equipment that requires repairing shall be immediately serviced and repaired. Since the period of HVAC Maintenance runs for Five Years concurrently with the defects liability period, all replacement parts and labour shall be supplied promptly free-of-charge to the Owner.

The contractor shall keep and maintain the installed system in good working . The Maintenance during DLP shall also include 1 visit by Engineer per week for the first 3 months and for remaining months 1 visit per month. The contractor shall anticipate requirement of parts and maintain an inventory of a reasonable number of spare parts, at his own cost on site in a self provided lockable store.

24. *UPTIME GUARANTEE*

The tenderer shall guarantee for the installed system an up time of 98%. In case of shortfall in any month during the defects liability period, the Defects Liability period shall be extended by a month for every month having short fall.
The Tenderer shall provide hard and soft copies of log books containing tables for daily record of all power consumption. Starting and stopping times for various equipment, daily services rendered for the system, alarms, maintenance and record of unusual observations etc. Tenderer shall also submit preventive maintenance schedule.
Each tenderer shall submit along with the tender, a detailed operation assistance proposal for the Services Consultant/ review. This shall include the type of service planned to be offered during Defects Liability Period and beyond. The operation assistance proposal shall give the details of the proposed monthly reports to the Management.
The tenderer shall include a list of other projects where such an Operation Assistance has been provided.

25. *MAINTENANCE – AFTER DEFECTS LIABILITY PERIOD*

Tenderer may be required to carry out maintenance of the entire system for a period of Five years beyond the defects liability period.

Tenderer shall quote rates for the above in prescribed Performa attached to BOQ. However, Owner at its sole discretion may defied to award the work with or without operation and maintenance contract and the decision of the owner shall be final and binding on contractor.

26. *PARTIAL ORDERING*

Owner through the Architect/ Consultant/ Client/ Project manager reserves the right to order equipment and material from any and all alternates, and /or to order high side and /or low side equipment and materials or parts thereof from one or more tenderers.

.

A P P E N D I X – I

LIST OF DRAWINGS

1:- HEAT LOAD CALCULATION FOR EACH AREA.

2 :- INTERNAL INDOOR UNITS MARKING PLANS EACH FLOORS.

3:- COPPER PIPES ROUTE PLAN WITH SIZES .

4:- EACH VRV CIRCUITS SLD.

5:- VRV ODU LOACTION PLANS.

6:- TOILET & KITCHEN VENTILATION PLANS.

7:-DUCT ROUTE PLAN.

8:- CORE CUT/ SLEEVES PLANS FOR COPPER PIPES .

A P P E N D I X–II

GUARANTEE PROFORMA

GUARANTEE FOR SYSTEM & ASSOCIATED INSTALLATION

We hereby guarantee the year round working HVAC WORK and associated installation which we have installed in the Complex described below:

Building : GANDHI DARSHAN MUSEUM

Location : JAIPUR

For a period of FIVE YEARS from the date of acceptance of the total intallation, We Agree to repair or replace at our own cost to the satisfaction of the OWNER, any or all such work that may prove defective in workmanship, equipment or materials within that period, ordinary wear and tear and unusual abuse or neglect excluded, together with any other work, which may be damaged or displaced in so doing. In the event of our failure to comply with the above-mentioned conditions within a reasonable time, after being notified in writing, we collectively and separately, do hereby authorize the OWNER to proceed to have the defects repaired and made good at our expense, and we shall pay the cost and charges thereof, immediately upon demand.

We also take complete responsibility of obtaining the approval from the concerned authorities (Pollution Control Board, Municipal Authority, etc.) for the installation and operation of the system.

SIGNATURE OF
TENDERER

FOR HVAC SYSTEM

DATE :
SEAL

APPENDIX-III

LIST OF BUREAU OF INDIAN STANDARDS CODES

All equipment, supply, erection, testing and commissioning shall comply with the requirements of Indian Standards and code of practices given below.

a)	IS 3615	:	Glossary of terms used in Refrigeration and Air-conditioning.
b)	IS 325	:	Three phase induction motor.
c)	IS 1239	:	Mild steel tubes, tubular and other wrought Steel fittings.
d)	IS 639	:	Steel pipe flanges.
e)	IS 277	:	Galvanized sheet steel.
f)	IS 737	:	Wrought aluminum and aluminum alloy sheet and strip for general engineering purpose.
g)	IS 655	:	Metal air ducts.
h)	IS 732	:	Code of practice for electrical wiring and fittings for buildings.
i)	IS 900	:	Code of practice for installation and maintenance of induction motors.
j)	IS 1248	:	Direct acting electrical indicating instruments.
k)	IS 6392	:	Steel pipe flanges.
l)	IS 1367	:	Technical supply conditions for threaded steel fasteners.
m)	IS 3588	:	Axial flow fans electric.
n)	IS 4894	:	Centrifugal fan.
o)	IS 2074	:	Ready mixed paint.
p)	IS 2208	:	HRC cartridge fuse links up to 650 V.
q)	IS 1554	:	PVC insulated (heavy duty) electrical cables for working Voltages up to and including 1100 V.
r)	IS 659	:	Air-conditioning safety code.
w)	IS 616	:	Mechanical refrigeration safety code.

APPENDIX-IV

LIST OF APPROVED MAKES

NAME OF PROJECT: GDM		
HVAC APPROVED MAKES LIST		
Sr. No.	**Details of Materials / Equipment**	**Manufacturer's Name**
1	VRF / VRV unit	Carrier / Bluestar/ Daikin / Samsung / Mitsubishi/ OGENERAL / VOLTAS
2	Ductable unit	Carrier / Bluestar/ Daikin / Samsung / Mitsubishi/ OGENERAL / VOLTAS
3	AIR WASHER	ZECO/EDGETECH/RAVI AIRCON
4	CASSETTE /SPLIT AC Units	Carrier / Bluestar/ Daikin / Samsung / Mitsubishi/ OGENERAL / VOLTAS
5	Flexible Couplings	Victaulic/Resistoflex/Dunlop OR Equivalent Approved
6	Cushy Foot Mounts	Resistoflex/ OR Equivalent Approved
7	Variable Frequency Drive	Danfoss/ ABB OR Equivalent Approved
8	DP Transmitter	TAC / Siemens/ Equivalent Approved
9	Inline Fans	AIRFLOW/ HUMIDIN/ Carryair/ Kruger / System Air / Eq Approved
10	Motors	Siemens / Crompton/ Bharat Bijlee /ABB OR Equivalent Approved
11	Filters	Dyna / Thermadyne / Spectrum / AAF OR Equivalent Approved
12	Expanded Polystyrene Insulation	Cooline / OR Equivalent Approved
13	Cross Linked Polymer Insulation	Armacell / Paramount / Equivalent Approved
14	Fiber Glass Insulation	Uptwiga / OR Equivalent Approved
15	Air Distribution Ducting (Site Febricated)	Sail / Nippon / OR Equivalent Approved
16	Grilles / Diffusers / Jet Nozzles	Ravistar / Cosmos / Carryaire/ Airflow /Tristar/ Mapro Eq Approved
17	Aero-Foil Dampers	Carryaire / Ravistar OR Equivalent Approved
18	Fresh Air Louvers/Assembly	Ravistar/ OR Equivalent Approved
19	Smoke / Fire Damper	Cosmos /Air Master / Caryaire / Dynacraft / Air Product / Ravistar/Tristar
20	Actuators	Belimo / Siemens
21	Sound Attenuator	Caryaire / Ravistar
22	Flexible Duct Connectors	Klimatech,
23	Anchor Fastener	Hilti
24	Duct Thermal & Acoustic Insulation	Thermobreak / Supreme/ ARMACELL
25	Closed Cell Nitrile Rubber along with adhesive	Armaflex / K-flex/ ARMACELL
26	Under deck Insulation	Thermobreak / Supreme/ ARMACELL
27	UPVC Drain Piping	Prince / Supreme
28	Cables	Polycab / Finolex / Hawells

29	Switchgears- MCB's, MCCB's etc.	Legrand / Indo-Asian / Siemens
30	Protective Coating over Closed Cell Electrometric – Fiberglass Woven Cloth	UP Twiga
31	Factory Made Duct	Alpha duct / Rollastar / Zeco / Nutech
32	Factory Made Spiral Duct	Seven Star
33	Pre-insulated flexible duct	Nutech / Owens Corning / Supaflex
34	Copper Pipes	Maxflow / Yorkshire / Rajco / Mehta tubes
35	Copper Pipe fittings	Conex Banninger/ NIBCO
36	Copper Pipe Insulation	Thermobreak / Supreme
37	Filters	Airtech / DYNA / Pyramid / TROX/ Thermodyne / AAF
38	cable tray	indiatech/era/pasco/venus

ASHRAE: - American Society of Heating, Refrigerating, and Air Conditioning.

ISHRAE: - Indian Society of Heating, Refrigerating, and Air Conditioning.

SMACNA: - Sheet Metal & Air Conditioning Contractor's National Association.

VRV TECHNICAL SPECIFICATION

1. GENERAL

These special conditions are intended to amplify the General Conditions of Contract, and shall be read in conjunction with the same. For any discrepancies between the General Conditions and these Special Conditions, the more stringent shall apply.

1.1 SCOPE

The scope of this section comprises the supply, erection testing and commissioning of **inverter based** Variable Refrigerant Flow System with hermetically sealed Scroll Compressor conforming to these specifications and in accordance with the requirements of Drawing and Schedule of Quantities

1.2 TYPE

Units shall be air cooled, variable refrigerant flow conditioner of **R410A** gas based consisting of one outdoor unit and multiple indoor units. Each indoor units having capability to cool or heat independently for the requirement of the rooms.

It shall be possible to connect minimum 12 & upto 16 indoor units on one refrigerant circuit (for single module – upto 18 HP). The indoor units on any circuit can be of different type and also controlled individually. Following type of indoor units shall be connected to the system:

- Ceiling mounted cassette type
- Ceiling mounted Ductable (HSP/MSP/LSP) type
- Ceiling suspended type
- Wall mounted type
- 1-Way Cassette Type
- 2-Way Cassette Type

Outdoor unit should be at least 50% inverter based compressor. The system shall be capable of changing the rotating speed of inverter compressor by inverter controller to follow variations in cooling and heating load.

Outdoor unit shall be suitable for mix match connection of all type of indoor units.

The refrigerant piping height difference between indoor units & outdoor unit shall be 90m maximum. Actual piping length **165 m lengths with maximum 90m** level difference **without any oil traps and total piping length with 1000m.**

Both indoor units and outdoor unit shall be factory assembled, tested and filled with first charge of refrigerant before delivering at site.

1.3 OUTDOOR UNIT

The outdoor unit shall be factory assembled, weather proof casing, constructed from heavy gauge mild steel panels and coated with baked enamel finish. The

Unit should be completely factory wired tested with all necessary controls and switch gears:

- The noise level shall not be more than 63 dB (for single module) (A) at anechoic chamber conversion value, measured horizontally 1m away and 1.5m above ground level.
- The outdoor unit shall be modular in design and should be allowed for side by side installation
- The unit shall be provided with its own microprocessor control panel.
- The outdoor units shall be complete with safety devices namely –high pressure switch, fan driver overload protector, over current relay, inverter overload protector.
- The oil mechanism shall be capable of oil film control by high thrust mechanism.

- The heat transfer circuit should perform super cooling before the expansion process in the indoor units .
- COP (in cooling) of any outdoor unit should not be less than 3.0
- Outdoor Unit must be capable to operate up to 46 Deg. C

The condensing unit shall be designed to operate safely when connected to multiple fan coil units, which have a combined operating nominal capacity minimum up to 50~130 **%** of indoor units for all modules & combinations of outdoor units

1.4 COMPRESSOR

The compressor shall be highly efficient scroll type, capable of inverter control. It shall change the speed in accordance to the variation in cooling or heating load requirement:

- All outdoor units shall have at least 9 steps of capacity control to meet load fluctuation and indoor unit individual control. All parts of compressor shall be sufficiently lubricated stock. Forced lubrication may also be employed.
- Oil heater shall be provided in the compressor casing.
- The compressor shall be with in-built crankcase heater

1.5 HEAT EXCHANGER

The heat exchanger shall be constructed with copper tubes mechanically bonded to aluminum fins to form a cross fin coal.

- The aluminum fins shall be covered **by anti-corrosion resin** film
- The unit shall be provided with necessary number of direct driven low noise level propeller type fans arranged for vertical discharge. Each fan shall have a safety guard.

1.6 REFRIGERANT CIRCUIT

The refrigerant circuit shall include liquid & gas shut-off valves and a solenoid valves at condenser end.

All necessary safety devices shall be provided to ensure the safely operation of the system.

1.7 SAFETY DEVICES

All necessary safety devices shall be provided to ensure safe operation of the system.

Following safety devices shall be part of outdoor unit; high pressure switch, fuse, crankcase heater, fusible plug, over load relay, protection for inverter, and short recycling guard timer.

1.8 OIL RECOVERY SYSTEM

Unit shall be equipped with an oil recovery system to ensure stable operation with long refrigeration piping lengths.

1.9 INDOOR UNIT

This section deals with supply, installation, testing, commissioning of various type of indoor units confirming to general specification and suitable for the duty selected. The type, capacity and size of indoor units shall be as specified in detailed Bill of Quantities. Units shall be factory assembled, wired, piped and tested.

Units shall have coils with copper tubes and bonded aluminum fins for highly efficient heat transfer.

Units shall have Centrifugal fans for adequate amount of Air circulation and low Noise. Units shall have inlet filters, which are easily cleanable and replaceable.
All components of Units are easily accessible for connection, repairs and maintenance.
Units shall have very low noise.

All units with Factory manufactured Units, Grills shall have auto swing feature for proper Air distribution.
All units shall be controlled by electronic Expansion Valves only.
All units mounted inside the ceiling shall have fans capable of sustaining duct connections, and special filters if necessary.
Visible indoor units shall have wireless remotes. Price of the same shall be included in cost of unit by default.
Concealed indoor units shall have sensor mounted on supply air grilles which can be controlled with wireless remotes.
Anticorrosion / Hydrophilic treatment for avoiding corrosion of coils.
All units shall have adequate insulation or Lining to avoid condensation.
All indoor units shall be equipped with automatic drain pump arrangement.

GENERAL

Indoor units shall be either ceiling mounted cassette type, or ceiling mounted ductable type or floor standing duct type or wall mounted type or other as specified in BOQ. These units shall have electronic control valve to control refrigerant flow rate respond to lead variations of the room.

a) The address of the indoor unit shall be set automatically in case of individual and group control

b) Even in case of maintenance / malfunction of any indoor unit in the system, all other units must operate without any error.

1.10 REFRIGERANT PIPING

All refrigerant piping for the air conditioning system shall be constructed from soft seamless upto 19.1mm and hard drawn copper refrigerant pipes for above 19.1mm with copper fittings and silver-soldered joints. The refrigerant piping arrangements shall be in accordance with good practice within the air conditioning industry, and are to include charging connections, suction line insulation and all other items normally forming part of proper refrigerant circuits.

All joints in copper piping shall be sweat joints using low temperature brazing and or silver solder. Before joining any copper pipe or fittings, its interiors shall be

thoroughly cleaned by passing a clean cloth via wire or cable through its entire length. The piping shall be continuously kept clean of dirt etc. while constructing the joints. Subsequently, it shall be thoroughly blown out using nitrogen.

After the refrigerant piping installation has been completed, **the refrigerant piping system shall be pressure tested using dry nitrogen. First start the nitrogen pressure test at 150 PSIG and hold for 3-4 minutes. Then increase the pressure to 325 PSIG and hold for 5-6 minutes. If no leaks are present, further increase the pressure to 550 PSIG and hold for 24 hours.** The system shall then be evacuated to minimum vacuum if 700mm hg and held for 24 hours.

The air-conditioning system supplier shall be design sizes and erect proper interconnections of the complete refrigerant circuit.

The thickness of copper piping shall not be less than mentioned below:

Pipe Size in mm (OD)	Wall Thickness in mm
a) 41.3	1.4
b) 38.1	1.3
c) 34.9	1.2
d) 31.8	1.1
e) 28.6	1.0
f) 25.4	1.0
g) 22.2	1.0
h) 19.1	1.0
i) 15.9	1.0
j) 12.7	0.8
k) 9.5	0.8
l) 6.4	0.8

The suction line pipe size and the liquid line pipe size shall be selected according to the manufacturers specified outside diameter. All refrigerant pipes shall be properly supported and anchored to the building structure using steel hangers, anchors, brackets and supports which shall be fixed to the building structure by means of inserts or expansion shields of adequate size and number to support the load imposed thereon.

To protect nitrile rubber insulation of exposed copper piping from degrading due ultra violet rays & atmospheric condition, it shall be covered polyshield coating with at least two coats of resin and hardener (Make- poly bond company) above nitrile rubber insulation. Fiberglass tape shall be helically wound & coated with painted two coats of resin with hardener to give smooth & plain finish.

1.11 PIPE INSULATION

a. Refrigerant Pipe Insulation

The whole of the liquid and suction refrigerant lines including all fittings, valves and strainer bodies, etc. shall be insulated with 19mm /13 mm thick elastomeric nitrile rubber as specified in BOQ.

b. Drain Pipe Insulation

Drain pipes carrying condensate water shall be insulated with 6 mm thick elastomeric nitrile rubber insulation.

For proper drainage of condensate, U Trap shall be provided in the drain piping (wherever required). All pipe supports shall be of pre fabricated & pre painted slotted angle supports, properly installed with clamps etc.

2. Air Distribution

2.1 Scope

The scope of this section comprises supply fabrication installation and testing of all sheet metal / MS ducts, supply installation testing and balancing of all grilles registers and diffusers, in accordance with these specifications and the general arrangement shown on the Drawings.

2.2 Duct Materials

All ducts shall be fabricated from galvanized steel sheets / aluminium sheets of the following thickness as indicated in Schedule of Quantities.

	GSS
Rectangular ducts upto 75 cm	24 gage
Rectangular ducts 76 to 150 cm and all round ducts.	22 gage
Rectangular ducts 151 to 225 cm	20 gages
Rectangular ducts greater than 225 cm	18 gage

Sheet metal ducts shall be fabricated out of galvanized steel sheets. Fabrication of ducts shall be through well conditioned Triplex lock former or multiple lock formers, conforming to relevant BIS Codes. Sheets used shall be produced by Hot Dip Process and galvanizing shall be Class VII - Light Coating of zinc, Nominal 180 gm /Sq m surface area.

Samples of sheet from each lot selected at random by Owner's site representative shall be subject to approval & gotten tested for thickness and zinc coating at contractor's expenses.

2.3 All ducts shall be fabricated and installed in workmanlike manner, generally conforming to relevant BIS Codes. Round exposed ducts shall be die-formed for achieving perfect circle configuration.

i. Ducts so identified on the Drawings shall be acoustically lined and insulated from outside as described in the section "Insulation" and as indicated in Schedule of Quantities. Duct dimensions shown on Drawings are overall sheet metal dimensions inclusive of the acoustic lining where required and indicated in Schedule of Quantities.

ii. Ducts shall be straight and smooth on the inside with neatly finished joints. All joints shall be made airtight.

iii. All exposed ducts up to 60 cm width within conditioned spaces shall have slip joints - or flanged joints. The internal ends of slip joints shall be in the direction of air flow. Ducts and accessories within ceiling spaces, visible from air conditioned areas shall be provided with two coats of mat black finish paint.

iv. Changes in dimensions and shape of ducts shall be gradual. Air-turns (Vanes) shall be installed in all bends and duct collars designed to permit the air to make the turn without appreciable turbulence.

v. Ducts shall be fabricated as per details shown on Drawings. All ducts shall be rigid and shall be adequately supported and braced where required with standing seams, tees, or angles, of ample size to keep the ducts true to shape and to prevent buckling, vibration or breathing.

vi. All sheet metal connection, partitions and plenums required to confine the flow of air to and through the filters and fans shall be constructed of 18 gage GSS / 16 gauge aluminium, thoroughly stiffened with 25 mm x 25 mm x 3 mm galvanized steel angle braces and fitted with all necessary inspection doors as required, to give access to all parts of the apparatus. Doors shall be not less than 45 cm x 45 cm in size.

vii. Plenums shall be panel type and assembled at site. Fixing of galvanized angle flanges on duct pieces shall be with rivets heads inside i.e. towards G S sheet and riveting shall be done from outside.

viii. Self adhesive rubber lining minimum 5 mm thick instead of felt shall be used between duct flanges and between duct and duct supports in all ducting installation.

ix. Kitchen exhaust ducting shall be with 16 G MS. Suitable access doors shall be provided at every 3m. Provision shall be made for fire fighting agency to install duct mounted sprinklers at every 3m. Generally exhaust ducts shall have slope towards kitchen hood.

Pre-insulated ducts

Pre-Insulated Ducting shall be fabricated from 20 mm thickness air duct panel sheet having dimensions of 3000 (Length) mm by 1200 (Width) mm and produced and Sandwiched with Rockwool or Polyisocyanurate (PIR) first quality insulating Foam having 35 Kg / m3 density. The Ducting Sheet shall have Lacquered & Embossed Aluminium facing on both sides.

Insulating foam material shall be Expanded Rigid Polyisocyanurate foam having closed cell content not less than 95%, CFC/ HCFC free, Non Toxic, Non combustible, zero ozone depletion, Zero Global Warming Potential and Non ignitable.

Ducting panels shall comply with following or equivalent standards and manufacturer should produce M1 & F1 certification for Fire & Toxicity test results.

i. BS 476: PART 6--Fire Propagation for Products
ii. BS 476: PART 7--- Surface Flame Spread (Class 1)
iii. Class O Fire Rating as per Building Regulation requirements.
iv. Thermal Conductivity Coefficient at 100C--0.022 W/m. K
v. Smoke Opacity Index—less than 10
vi. Rigidity class: 200000 Nm m2/mm
vii. Water vapor permeability of laminations = 0

All required accessories; Connecting Flanges, Invisible Bayonet, Adhesive, Sealant, Duct Supports shall be part of ducting work for fabrication of the HVAC ducting in Square, rectangle, radius, offset construction etc., appropriate sizes of Aluminium flanges with self-adhesive good quality gasket shall be provided as a joinery or connection of duct pieces.

Excellent quality Silicon Neutral Sealant of Approved make along with fire rated PVC corners shall be used for sealing of all joints & corners.
Complete ducting shall be installed incorporating duct supports such as galvanized angles, threaded rods, self adhesive brackets, Etc

2.4 All ducts shall be installed generally as per tender Drawings, and in strict accordance with approved shop drawings to be prepared by the Contractor

i. The Contractor shall provide and neatly erect all sheet metal work as may be required to carry out the intent of these Specifications and Drawings. The work shall meet with the approval of Owner's site representative in all its parts and details.

ii. All necessary allowances and provisions shall be made by the Contractor for beams, pipes, or other obstructions in the building, whether or not the same are shown on the Drawings. Where necessary to avoid beams or other structural work, plumbing or other pipes, and conduits, the ducts shall be transformed, divided or curved to one side (the required area being maintained) all as per the site requirements.

iii. If a duct cannot be run as shown on the Drawings, the Contractor shall install the duct between the required points by any path available, in accordance with other services and as per approval of Owner's site representative.

iv. All duct work shall be independently supported from building construction. All horizontal ducts shall be rigidly and securely supported, in an approved manner, with trapeze hangers formed of galvanized steel rods and galvanized steel angle/channel under ducts at no greater than 2 meter centre. All vertical duct work shall be supported by structural members on each floor slab. Duct supports may be through galvanised steel insert plates left in slab at the time of slab casting. Galvanised steel cleat with a hole for passing the hanger rods shall be welded to the plates. Trapeze hanger formed of galvanized steel rods and angles/ channels shall be hung through these cleats. Wherever use of metal insert plates is not feasible, duct support shall be through dash /anchor fastener driven into the concrete slab by electrically operated gun. Hanger rods shall then hang through the cleats.

v. Ducting over furred ceiling shall be supported from the slab above, or from beams, after obtaining approval of Owner's site representative. In no case shall any duct be supported from false ceiling hangers or be permitted to rest on false ceiling. All metal work in dead or furred down spaces shall be erected in time to occasion no delay to other Contractor's work in the building.

vi. Where ducts pass through brick or masonry openings, it shall be provided with 25 mm thick TF quality expanded polystyrene around the duct and totally covered with fire sealant such as fire barrier mortar for complete sealing.

vii. All ducts shall be totally free from vibration under all conditions of operation. Whenever ductwork is connected to fans, air handling units or blower coil units that may cause vibration in the ducts, ducts shall be provided with a flexible connection, located at the unit discharge. Flexible connections shall be constructed of flame retardant, waterproof, silicon rubber impregnated flexible connection at least 10 cm long securely bonded and flange bolted on both sides. Sleeve shall be made smooth and the connecting ductwork rigidly held by independent supports on both sides of the flexible connection. The flexible connection shall be suitable for pressure at the point of installation.

viii. Duct shall not rest on false ceiling and shall be in level from bottom. Taper pieces shall taper from top.

ix. Radium arrow stickers indicating direction of air flow in duct shall be provided.

2.5 Dampers

i. Dampers: All duct dampers shall be opposed blade louver dampers of robust 16 G GSS construction and tight fitting. The design, method of handling and control shall be suitable for the location and service required.

ii. Dampers shall be provided with suitable links levers and quadrants as required for their proper operation. Control or setting device shall be made robust, easily operable and

accessible through suitable access door in the duct. Every damper shall have an indicating device clearly showing the damper position at all times.

iii. Dampers shall be placed in ducts at every branch supply or return air duct connection, whether or not indicated on the Drawings, for the proper volume control and balancing of the air distribution system.

2.6 Fire & smoke dampers

i. All supply and return air ducts at AHU room crossings and at all floor crossings shall be provided with Motor operated Fire & smoke damper of at least 90 minutes rating as per UL555/1995 tested by CBRI. These shall be of multi-leaf type and provided with Spring Return electrical actuator having its own thermal trip for ambient air temperature outside the duct and air temperature inside the duct. Actuator shall have Form fit type of mounting, metal enclosure and guaranteed long life span.

ii. Fire damper blades and outer frames shall be of 16G galvanized steel construction fitted with 18 gage extended sleeves on both sides. The damper blade shall be pivoted on both ends using chrome plated spindles in self lubricated bronze bushes. Stop seals shall be provided on top and bottom of the damper housing made of 16G galvanized sheets steel. For preventing smoke leakage metallic compression seals will be provided.

iii. The electric actuator shall be energized either upon receiving a signal from smoke detector installed in AHU room supply air duct / return air duct or temperature sensor. The fire damper shall also close upon sensing temperature rise in supply air ducts thru the electronic temperature sensor.

iv. Each damper shall be provided with its own control panel, mounted on the wall and suitable for 240 VAC supply. This control panel shall be suitable for spring return actuator and shall have at least the following features:

   a. Potential free contacts for AHU fan ON/ off and remote alarm indication.

   b. Accept signal from external smoke / fire detection system for tripping the electrical actuator.

   c. Test and reset facility.

   d. Indicating lights / contacts to indicate the following status:
   e. Power Supply On

   f. Alarm

   g. Damper open and close position.

v. Actuators shall be mounted on the sleeve by the damper supplier in his shop and shall furnish test certificate for satisfactory operation of each Motor Operated Damper in conjunction with its control panel. Control panel shall be wall mounted type.

vi. It shall be HVAC Contractor's responsibility to co-ordinate with the Fire Alarm System Contractor for correctly hooking up the Motor Operated Damper to Fire Detection / Fire Management System. All necessary materials for hooking up shall be supplied and installed by HVAC Contractor under close co-ordination with the fire protection system contractor.

vii. HVAC Contractor shall demonstrate the testing of all Dampers and its control panel after necessary hook up with the fire protection / fire management system is carried out by energizing all the smoke detectors with the help of smoke.

viii. HVAC Contractor shall provide Fire retardant cables wherever required for satisfactory operation and control of the Damper.

ix. HVAC Contractor shall strictly follow the instructions of the Damper Supplier or avail his services at site before carrying out testing at site.

x. Fire/smoke damper shall be provided with factory fitted sleeves; however, access doors shall be provided in the ducts wherever duct crosses the wall in accordance with the manufacturer's recommendations.

xi. The Contractor shall also furnish to the Owner, the necessary additional spare actuators and temperature sensor (a minimum of 5% of the total number installed) at the time of commissioning of the installation.

2.7 Fire dampers

i. Whenever a supply/return duct crosses from one fire zone to another, it shall be provided with approved fire damper of at least 1½ hour fire rating as per UL555/1995 tested by CBRI. This shall be curtain type fire damper.

ii. Fire damper blades shall be one piece folded high strength 16 gage galvanised steel construction. In normal position, these blades shall be gathered and stacked at the frame head providing maximum air passage and preventing passing air currents from creating noise or chatter. The blades shall be held in position through fusible link of temp 70o C.

iii. In case of fire, the intrinsic energy of the folded blades shall be utilized to close the opening. The thrust of the suddenly released tension shall instantly drive the blades down and keep it down without the use of springs, weights or other devices subject to failure.

iv. Fire damper sleeves and access doors shall be provided within the duct in accordance with the manufacturer's recommendation.

v. The contractor shall also furnish to the Owner, the necessary additional fusible links (spares), as recommended by the manufacturer, at the time of commissioning of the installation.

2.8 Supply and return air registers

Supply & return air registers shall be of either steel or aluminium sections as specified in schedule of quantities. Steel construction registers shall have primer Coat finish whereas extruded aluminium registers shall be either Anodized or Powder Coated as specified in Schedule of Quantities. These registers shall have individually adjustable louvers both horizontal and vertical. Supply air registers shall be provided with key

operated opposed blade extruded aluminium volume control damper anodized in matt black shade.

The registers shall be suitable for fixing arrangement having concealed screws as approved by Architect. Linear continuous supply cum return air register shall be extruded aluminium construction with fixed horizontal bars at 15 Deg. inclination & flange on both sides only (none on top & bottom). The thickness of the fixed bar louvers shall be minimum 5.5 mm in front and 3.8 mm in rear with rounded edges. Flanges on the two sides shall be 20 mm/30 mm wide as approved by Architect. The grilles shall be suitable for concealed fixing. Volume control dampers of extruded aluminium anodized in black color shall be provided in supply air duct collars. For fan coil units horizontal fixed bar grilles as described above shall be provided with flanges on four sides, and the core shall be & suitable for clip fixing, permitting its removal without disturbing the flanges.

i. All registers shall be selected in consultation with the Architect. Different spaces shall require horizontal or vertical face bars, and different width of margin frames. These shall be procured only after obtaining written approval from Architect for each type of register.

ii. All registers shall have a soft continuous rubber/foam gasket between the periphery of the register and the surface on which it has to be mounted. The effective area of the registers for air flow shall not be less than 66 percent of gross face area.

iii. Registers specified with individually adjustable bars shall have adjustable pattern as each grille bar shall be pivot able to provide pattern with 0 to +45 degree horizontal arc and upto 30 degree deflection downwards. Bars shall hold deflection settings under all conditions of velocity and pressure.

iv. Bar longer than 45 cm shall be reinforced by set-back vertical members of approved thickness.

v. All volume control dampers shall be anodized aluminium in mat black shade.

2.9 Supply and return air diffusers

Supply and return air diffusers shall be as shown on the Drawings and indicated in Schedule of Quantities. Mild steel diffusers/dampers shall be factory coated with rust-resistant primer. Aluminium diffusers shall be powder coated & made from extruded aluminium section as specified in schedule of quantities.

i. Rectangular Diffusers shall be steel / extruded aluminium construction, square & rectangular diffusers with flush fixed pattern for different spaces as per schedule of quantities these shall be selected in consultation with the Architect. These shall be procured only after obtaining written approval from Architect for each type of diffuser.

ii. Supply air diffusers shall be equipped with fixed air distribution grids, removable key-operated volume control dampers, and anti-smudge rings as required in specific applications, and as per requirements of schedule of quantities. All extruded aluminium diffusers shall be provided with removable central core and concealed key operation for volume control damper.

iii. Linear Diffuser shall be extruded aluminium construction with removable core, one or two-way blow type. Supply air diffusers shall be provided with volume control/ balancing dampers within the supply air collar. Diffusers for different spaces shall be selected in consultation with the Architect, and provided as per requirements of schedule of quantities. All diffusers shall have volume control dampers of extruded aluminium construction anodized in mat black shade.

iv. Slot Diffuser shall be extruded aluminium construction multispot type with air pattern controller provided in each slot. Supply air diffusers shall be provided with Hit & Miss volume control dampers in each slot of the supply air diffusers. Diffusers for different spaces shall be selected in consultation with the Architect and provided as per requirement of Schedule of Quantities.

2.10 Measurements for ducting

Unless otherwise specified, measurements for ducting for the project shall be on the basis of centre-line measurements described herewith

i. Duct Work shall be measured on the basis of external surface area of ducts. Duct measurements shall be taken before application of the insulation. The external surface area shall be calculated by measuring the perimeter comprising overall width and depth, including the corner joints, in the centre of each duct section, multiplying with the overall length from flange face to flange face of each duct section and adding up areas of all duct sections. Plenums shall also be measured in similar manner.

For tapered rectangular ducts, the average width and depth shall be considered for perimeter, whereas for tapered circular ducts, the diameter of the section midway between large and small diameter shall be adopted, the length of tapered duct section shall be the centre line distance between the flanges of the duct section.
For special pieces like bends, tees, reducers, branches and collars, mode of measurement shall be identical to that described above using the length along the entire line.
The quoted unit rate for external surface of ducts shall include all wastage allowances, flanges and gaskets for joints, nuts and bolts, hangers and angles with double nuts for supports, rubber strip 3 mm thick between duct and support, vibration isolator suspension where specified or required, inspection chamber / access panel, splitter damper with quadrant and lever for position indication, turning vanes, straightening vanes, and all other accessories required to complete the duct installation as per the Specifications. These accessories shall NOT be separately measured nor paid for.

ii. Special Items for Air Distribution shall be measured by the cross-section area perpendicular to air flow, as identified herewith

a. Grilles and registers - width multiplied by height, excluding flanges. Volume control dampers shall form part of the unit rate for registers and shall not be separately accounted.

b. Diffusers - cross section area for air flow at discharge area, excluding flanges. Volume control dampers shall form part of unit rate for supply air diffusers and shall not be separately accounted.

c. Linear diffusers - shall be measured by cross-sectional areas and shall exclude flanges for mounting of linear diffusers. The supply air plenum for linear diffusers shall be measured with ducting as described earlier.

d. Fire dampers - shall be measured by their cross sectional area perpendicular to the direction of air flow. Quoted rates shall include the necessary collars and flanges for mounting, inspection pieces with access door, electrical actuators and panel. No special allowance shall be payable for extension of cross section outside the air stream.

e. Flexible connection - shall be measured by their cross sectional area perpendicular to the direction of air flow. Quoted rates shall include the necessary mounting

arrangement, flanges, nuts and bolts and treated-for-fire requisite length of canvas cloth.

f. Kitchen Hoods - shall be measured by their cross sectional area at the capture point of fumes, parallel to the surface of kitchen equipment. Quoted rates shall include the grease filters, provision for hood light, suspension arrangement for the hood, profile to direct the air to ventilation ducts and provision for removable drip tray.

2.11 Testing and balancing

After the installation of the entire air distribution system is completed in all respects, all ducts shall be tested for air leaks by visual inspection.

The entire air distribution system shall be balanced using an anemometer. Measured air quantities at fan discharge and at various outlets shall be identical to or less/excess than 5 percent in excess of those specified and quoted. Branch duct adjustments shall be permanently marked after air balancing is completed so that these can be restored to their correct position if disturbed at any time. Complete air balance report shall be submitted for scrutiny and approval, and four copies of the approved balance report shall be provided with completion documents.

3 INSULATION

3.1 Scope

The scope of this section comprises the supply and application of insulation conforming to these specifications.

3.2 Material

Insulation material for Duct & Pipe insulation shall be closed cell physically cross linked polyethylene foam with reinforced aluminum foil & factory applied acrylic adhesive backing or Thermal conductivity of the insulation material shall not exceed 0.032 W/m Deg K at mean temperature of 23 Deg C. Density of the polyethylene foam shall be 25 Kg/m3. The product shall have temperature range of –80 Deg C to 100 Deg C. The insulation material shall be fire rated for Class O as per BS 476 Part 6:1989 as per the fire propagation test and for Class 1 as per BS 476 Part 7:1987 as per the surface spread of flame test. Water vapor permeability (ASTM E96) shall be better than 8.19 X 10-15 Kg/Pa.s.m. The insulation material should be non hygroscopic. The material shall have approval from the Chief Fire Officer. Material shall also be FM global approved.

Thickness of the insulation shall be as specified for the individual application. Each lot of insulation material delivered at site shall be accompanied with manufacturer's test certificate for thermal conductivity values, density, water vapor permeability and fire properties. Samples of insulation material from each lot delivered at site may be selected by Owner's site representative and gotten tested for thermal conductivity and density at Contractor's cost. Adhesive used for sealing the insulation shall be non-flammable, vapor proof, low VOC, rubber/neoprene based contact adhesive strictly as per manufacturer's recommendations.
Ducting insulation thickness shall be as per table below.

3.3 Duct acoustic Insulation

Material shall be Open Cell cross linked Polyethylene foam insulation of flame Retardant grade with thermal conductivity (K) value should not be less than 0.041W/mK. It should have the acoustical Absorption coefficients as per ISO 354-2006. Thickness of the material shall be as per specified for the individual application in the Bill of Quantities.

Ducts so identified and marked on drawings and included in Schedule of Quantities shall be provided with acoustic lining of thermal insulation material for a distance of minimum 5 meters as follows.

For the duct acoustic insulation rubber/neoprene based contact adhesive wet glue shall be used. Both the surfaces (GI sheet and insulation) shall be free of dust and grease.

The surfaces should be wiped with a clean cloth. A thin film of glue is applied to both the GI surface and the insulation. When adhesive is tack dry Wait after (2-5 minutes) and the solvent evaporated, the surfaces are brought together and pressure is applied to fix the insulation to the duct surface.

3.4 Duct thermal insulation

External thermal insulation shall be provided as follows:

The thickness of cross linked polyethylene shall be as shown on drawing or identified in the schedule of quantity. Following procedure shall be adhered to:

Duct surfaces shall be cleaned to remove all grease, oil, dirt, etc. prior to carrying out insulation work. Suitable solvents such as methylated spirits or alcohol based solvents can be used to clean the surfaces. Measurement of surface dimensions shall be taken properly to cut cross linked polyethylene sheets to size with sufficient allowance in dimension. Cutting of cross linked polyethylene shall be done with adjustable blade to make 900 cut in thickness of insulation sheet. Hacksaw or blades are not acceptable tools for cutting the insulation.

Material shall be installed in accordance with manufacturer's instructions. Care should be taken that shall be no air pockets present after installation. All joints should be butted firmly against each other. No adhesive is required for the joints (self adhesive system). All joints are sealed with 75mm reinforced aluminum foil. Insulation at supports, protrusions and interruptions should be properly finished. Any minor surface cuts should be covered with aluminum foil.

3.5 Piping insulation

All Copper and drain piping shall be insulation shall be of closed cell physically cross linked polyethylene foam with reinforced aluminum foil insulated in the manner specified herein. Before applying insulation, all pipes shall be brushed and cleaned. Thermal insulation shall be applied as follows or as specified in drawings or schedule of quantity

Manufacturer's installation manual shall be submitted and followed for full compliance. All insulation work shall be carried out by skilled workmen specially trained in this kind of work. Verify that all pipe surfaces are clean and dry. Install materials in accordance with manufacturer's instructions. All longitudinal and ends should be joined with suitable neoprene (rubber) contact adhesive. Apply glue to both surfaces to be glued. Wait until glue is tack dry and press the surfaces together. Ensure a proper joint is achieved.

Seal joins with 75 mm reinforced aluminum foil tape. Any minor surface cuts should be covered with aluminum foil.

3.6 Under deck insulation

Under deck insulation shall be 25mm thick closed cell physically cross linked polyethylene foam with reinforced aluminum foil. Under deck surface of ceiling shall be cleaned and made dirt free. Insulation should be mechanically fixed with a pin/clip fastening system suited to the structure of the under slab. All joints should be butted firmly together & sealed with high grade aluminum foil tape such as PPC 493 or equivalent.

3.7 MEASUREMENT OF INSULATION

Unless otherwise specified measurement for duct and pipe insulation for the project shall be on the basis of centre line measurements described herewith

i. Pipe Insulation shall be measured in units of length along the centre line of the installed pipe, strictly on the same basis as the piping measurements described earlier. The linear measurements shall be taken before the application of the insulation. It may be noted that for piping measurement, all valves, orifice plates and strainers are separately measurable by their number and size. It is to be clearly understood that for the insulation measurements, all these accessories including cladding, valves, orifice plates and strainers shall be considered strictly by linear measurements along the centre line of pipes and no special rate shall be applicable for insulation of any accessories, fixtures or fittings whatsoever.

ii. Duct Insulation and Acoustic Lining shall be measured on the basis of surface area along the centre line of insulation thickness. Thus the surface area of externally thermally insulated or acoustically lined be based on the perimeter comprising centre line (of thickness of insulation) width and depth of the cross section of insulated or lined duct, multiplied by the centre-line length including tapered pieces,

iii. Roof & under deck Insulation shall be measured on the basis of surface area along the centre line of insulation thickness.

4 QUALITY ASSURANCE, INSPECTION, TESTING AND COMMISSIONING

4.1 Scope

The following quality assurance, inspection, testing and commissioning procedures shall be required to be carried out upon award of work.

i. Provide quality assurance program (QAP), works quality assurance program (WQAP), field quality assurance program (FQAP) and quality plan.

ii. Tests at manufacturer's works.

iii. Perform site tests and commissioning.

4.2 Submittals

i. After award of work following information shall be submitted.

   a. Quality Assurance Program (QAP)
   b. Works Quality Assurance program (WQAP)
   c. Field Quality Assurance Program (FQAP)

ii. For inspection and testing, submit inspection and testing procedures, program, and record sheets applicable at each hold point.

iii. After completion of testing, submit test records, packaging, transportation and storage instructions and methods.

iv. For site installation and commissioning, submit installation methods or procedures, notification and procedures for Pre-commissioning and commissioning.

v. After commissioning, submit site test records, as-built drawings, manufacturer's operation maintenance manuals and list of recommended spares and tools.

4.3 Quality assurance concept control

i. Minimum requirements for establishing and implementing a quality assurance program shall be applied to all aspects of the work necessary for carrying out the contract. Quality assurance shall extend to material parts, components, systems and services as a means of obtaining and sustaining the reliability of critical items, operating performance, maintenance and safety.

ii. Acceptance of the Contractor's quality assurance program does not relieve the Contractor's obligation to comply with the requirement of the contract document. If the program is found to be ineffective, then the Owner's site representative reserves the right to request for necessary revisions of the program.

iii. The Contractor is required to produce readily identifiable documentary evidence covering the extent and details of both his own and his sub contractor's quality assurances system as follows

   a. Quality Assurance Program (QAP)
   b. Works Quality Assurance program (WQAP)
   c. Field Quality Assurance Program (FQAP)
   d. Quality Plan.

iv. These documents shall be prepared separately and submitted to the Owner's site representative at the time of starting the work.

v. Quality Plan and Manual shall be prepared by the Contractor for all items and services to be supplied, after the contract has been placed, but before commencement of fabrication, and shall be subject to evaluation and acceptance by the Owner's site representative before start of work.

4.4 Quality assurance manual (qam)

i. The QAM shall be a general comprehensive document outlining the Contractor's basic organization, policies and procedures. The information to be given in the QAM shall include but not limited to

a. Quality Policy.
b. Quality Assurance Program
c. Organization Structure showing inters relationships.
d. Functional responsibilities and levels of authority.
e. Lines of communication.
f. Customer relations.
g. Laboratory Facilities.

4.5 Works quality assurance PROGRAMME (wqap)

i. The WQAP shall identify the Contractor's Quality Assurance Program at works applicable throughout all phases of Contract performance, including design, procurement, manufacture, inspection and testing. It shall identify each of the program elements to be designed, developed, executed and maintained by the Contractor for the purpose of ensuring that all supplies and services comply with this specification.

ii. The information to be given under this program shall include but not limited to:

a. Organization and Responsibility.
b. Contract Review.
c. Design and Document Control.
d. Procurement Control.
e. Production Control.
f. Control on Sub-contractors.
g. In-process Quality Control and Traceability.
h. Inspection and Testing.
i. Control of Non-conformances.
j. Corrective Action.
k. Control of Inspection, Measuring and Test Equipment.
l. Handling, Storage, Packaging and Delivery.
m. Records.
n. Quality Audits.
o. After - Sales Servicing.

4.6 Field quality assurance programme (fqap)

i. This program shall identify the Contractor's Quality Assurance Program at site applicable throughout site construction, erection and commissioning. It is the underlying philosophy that the quality built into the product at works shall be maintained throughout the construction and commissioning stages.

ii. While, in principle, the FQAP shall include the items discussed in WQAP, it shall, however, be approached differently to take into account site conditions.

iii. The FQAP shall include, but not limited to the following information:

a. Organization and responsibility.
b. Control of Drawings and Documentation.
c. Product Checklist.

d. Control and Traceability of Purchased materials and services.
e. Receipt Inspection of materials at site.
f. Material Storage Control.
g. Inspection and Examination Procedures.
h. Control of Painting and Insulation Works.
i. Pre-commissioning.
j. Commissioning.
k. Control of Non-conformances.
l. Corrective Action.
m. Control of Inspection, Measuring and Test Equipment.
n. Records.
o. Completion Documents.
p. List of recommended spares and tools.
q. Personal Training.
r. Servicing during Defects Liability Period.

4.7 Quality plan

i. The contractor shall be required to prepare manufacturing and construction/erection quality plans for all equipment items and services. The quality plan shall also define the involvement of Owner's site representative in the inspection and test program.

ii. The Quality Plan shall incorporate as appropriate:

a. Charts indicating flow of materials, parts and components through manufacturing quality control inspection and test to delivery and erection.
b. The charts shall indicate the location of hold points for quality control, inspection and test beyond which manufacture shall not continue until the action required by the hold point is met, and the documentation required is generated.
c. The control documents associated with each hold point, i.e. drawings, material, specification, Works Process Schedule (WPS), Process Quality Records (PQR), quality control methods and procedures and acceptance standards.

4.8 Site quality control section

i. The Contractor's Quality Control (Q.C.) section shall be headed by an experienced Quality Control Engineer. He shall be assisted by other supervisors. The section shall be an independent one, reporting to the contractor's Site Manager only on administrative matters, but otherwise under full control by the Contractor's Corporate Quality System Management.

ii. The Contractor's Q.C. Section shall liaise closely with the Owner's site representative in charge of Quality Assurance/Quality Control, and to whom it shall give fullest cooperation. It is the underlying principle of this contract document that while the Contractor's Q.C. Engineer implements the Contractor's Quality Program, the adequacy and effectiveness of that implementation shall be audited by the Owner's site representative whose recommendations on improving or maintaining quality shall be acted upon promptly by the Contractor's Q.C. Section.

4.9 Inspection and testing

i. All equipment and components supplied may be subjected to inspection and tests by the Consultant/ Owner's site representative during manufacture, erection/installation and after completion. The inspection and tests shall include but not be limited by the

requirements of this contract document. Prior to inspection and testing, the equipment shall undergo pre-service cleaning and protection.

ii. Tenderer shall state and guarantee the technical particulars listed in the Schedule of Technical Data. These guarantees and particulars shall be binding and shall not be varied without the written permission of the Owner's site representative.

iii. No tolerances shall be allowed other than the tolerances specified or permitted in the relevant approved Standards, unless otherwise stated.

iv. If the guaranteed performance of any item of equipment is not met and / or if any item fails to comply with the specification requirement in any respect whatsoever at any stage of manufacture, test or erection, the Owner's site representative may reject the item, or defective component thereof, whichever he considers necessary; and after adjustment or modification as directed by the Owner's site representative, the contractor shall submit the item for further inspection and /or test.

v. The approval of the Owner's site representative of inspection and/or test results shall not prejudice the right of the Owner's site representative to reject an item of equipment if it does not comply with the contract document when erected, does not or prove completely satisfactory in service.

The Contractor shall be responsible for the timely transmission of the relevant and appropriate sections of the contract document to manufacturers and sub-contractors for the proper execution of all tests at their works as per contract specifications.

4.10 Tests at manufacturers works

i. All tests to be performed during manufacture, fabrication and inspection shall be agreed with the Consultant/ Owner's site representative prior to commencement of the work. The Contractor shall prepare the details of the schedule and submit these to the Consultant/ Owner's site representative for approval. It must be ensured that adequate relevant information on the design code/standard employed, the manufacture /fabrication/assembly procedure and the attendant quality control steps proposed are made available to the Consultant/Owner's site representative who will mark in the appropriate spaces his intention to attend or waive the invited tests, or inspections. Contractor shall arrange inspection and factory witness test for centrifugal, screw chiller and vapor absorption chiller.

ii. A minimum of twenty-one days' notice of the readiness of equipment for test or inspection shall be provided to the Owner's site representative by the Contractor (whether the tests be held at the Contractor's of Sub-contractor's works). The subject items should remain available for Owner's site representative inspection and test up to a minimum 10 days beyond the agreed date of witnessing the test. Every facility in respect of access, drawings, instruments and manpower shall be provided by the Contractor and sub-contractor to enable the Owner's site representative to carry out the necessary inspection and testing of the Plant.

iii. No plant shall be packed, prepared for shipment, or dismantled for the purpose of packing for shipment, unless it has been satisfactorily inspected, all tests called for have been successfully carried out in the presence of the Owner's site representative or approved for shipment, or alternatively inspection has been waived.

iv. Functional electrical, mechanical and hydraulic tests shall be carried out on completed assemblies in the works. The extent of these tests and method of recording the results shall be submitted to, and agreed by, the Owner's site representative in sufficient time to enable the tests to be satisfactorily witnesses, or if necessary for any changes required to the proposed program of tests to be agreed.

v. The Consultant/Owner's site representative reserves the right to visit the Manufacturer's works at any reasonable time during fabrication of equipment and to familiarize him with the progress made and the quantity of the work to date.

vi. Within 30 days of completion of any tests, triplicate sets of all principal test records, test certificates and correction and performance curves shall be supplied to the Owner's site representative.

vii. These test records, certificates and performance curves shall be supplied for all tests, whether or not they have been witnessed by the Owner's site representative or not. The information given on such test certificates and curves shall be sufficient to identify the material or equipment to which the certificate refers and should also bear the Contract reference title.

viii. When all equipment has been tested, the test certificates from all works and site tests shall be compiled by the Contractor into volumes and bound in an approved from complete with index and four copies of each volume shall be supplied to Consultant/ Owner's site representative.

ix. Stage wise inspection of equipment in factory in waived.

4.11 Performance tests ar manufactures works

i. All equipment may be subjected to routine performance tests at the Manufacturer's Works in accordance with the relevant ANSI, ASME, ASTM, BIS standard including operating tests of complete assemblies to ensure correct operation of apparatus and components.

ii. Pumps, fans, compressor, and other rotating equipment shall be given full load tests, and run to 15% over speed for 5 minutes to check vibration. Main and auxiliary gear boxes shall be subjected to shock load tests and a six-hour endurance run at rated speed and maximum torque.

iii. The Contractor shall submit single line diagrams including the layout of the Plant together with the location of test instrumentation and the principal dimensions of the layout. All calculations to derive performance data shall be made strictly in accordance with format given in the approved standards. Any alterations or deviations from the approved standard test layout or formulae shall be subjected to the prior approval of the Owner's Site Representative.

iv. The performance test shall be conducted over the full operating range of the pump to a closed valve condition and a minimum of five measurement points covering the full range shall be taken. Curves indicating Quality vs. Head, Quantity vs. Power absorbed, and Quantity vs. Pump efficiency shall be provided. In addition a curve of the NPSH required vs. Quantity shall be provided except when the suction conditions do not require this test. Any proposal for the omission of this test shall be to the approval of the Consultant/ Owner's site representative.

v. On completion of the tests the Contractor shall submit a report showing the test results obtained together with the curves corrected to the site operating conditions.

5 TESTING, ADJUSTING AND BALANCING

5.1 Scope

i. Testing, adjusting and balancing of heating, ventilating and air-conditioning systems at site.

Comply with current editions of all applicable practices, codes, methods of standards prepared by technical societies and associations including:

ASHRAE: 2010 HVAC Application.

IS 677: Manual for the Balancing and Adjustment of air distribution System.

5.2 Performance

i. Verify design conformity.

ii. Establish fluid flow rates, volumes and operating pressures.

iii. Establish operating sound and vibration levels.

iv. Adjust and balance to design parameters.

v. Record and report results as per the formats specified.

5.3 Definitions

i.	Test	To determine quantitative performance of equipment.
ii.	Adjust	To regulate for specified fluid flow rates and air patterns at terminal equipment (e.g. reduce fan speed, throttling etc.)
iii.	Balance	To proportion within distribution system (sub mains, branches and terminals) in accordance with design quantities.

5.4 Testing adjusting and balancing (tab) procedures

The following procedures shall be directly followed in TAB of the total system.

Before commencement of each one of the TAB procedure explained hereunder, the contractor shall intimate the PMC about his readiness to conduct the TAB procedures in the format given in these specifications.

5.5 Description of system and requirements

Adjust and balance the following system to provide most energy efficient operation compatible with selected operating conditions.

i. All supply, return and outside air systems.
ii. All exhaust air systems.
iii. All VRV systems.
iv. Emergency purge systems.

5.6 Air systems

i. Air Handlers Performance

The TAB procedure shall establish the right selection and performance of the AHUs, CSU , etc with the following results

a. Air-IN DB and WB temperature.
b. Air-OUT DB and WB temperature.
c. Dew point air leaving.
d. Sensible heat flow.
e. Latent heat flow.
f. Sensible heat factor.
g. Fan air volume.
h. Fan air outlet velocity.
i. Fan static pressure.
j. Fan power consumption.
k. Fan speed.

ii. Air distribution

Both supply and return air distribution for each Indoor Units and for areas served by the Indoor Units shall be determined and adjusted as necessary to provide design air quantities. It shall cover balancing of air through main and branch ducts utilizing telescoping probes of Electronic Rotating Vane Anemometers and Accubalance for grilles and diffusers.

iii. The Preparatory Work

To conduct the above test, following preparatory works are required to be carried out including the availability of approved for construction shop drawings and submittals

a. All outside air intake return air and exhaust air dampers are in proper position.

b. All system volume dampers and fire dampers are in full open position.
c. All access doors are installed & are airtight.
d. Grilles are installed & dampers are fully open.
e. Provision and accessibility of usage of TAB instruments for traverse measurements are available.
f. All windows, doors are in position.
g. Duct systems are of proper construction and are equipped with turning vanes and joints are sealed.
h. Test holes and plugs for ducting.

5.7 Readiness for commencement of tab

Before starting of any of the tests, the readiness to do so should be recorded as per the prescribed checklist.

5.8 Tab instruments

i. Air Measuring Instruments

   a. For measuring DB and WB temperature, RH and dew point, microprocessor based TSI USA make VelociCalc plus Meter, Model 8386, or equivalent shall be used. This instrument shall be capable of calculating the sensible, latent total heat flows, sensible heat factor and give printouts at site and have data logging/downloading facility.

   b. For measuring Air velocity, DB temperature and Air volume, TSI USA make VelociCalc meter model 8386/ 8345 or equivalent shall be used. It shall be able to provide instant print out of recorded Air volume readings.

   c. Pitot tube.

   d. Electronic Rotary Vane Anemometer TSI make or equivalent.

   e. Accubalance Flow Measuring Hood TSI make or equivalent.

   [All above instruments shall have a valid certification from a reputed testing institution.]

ii. Rotation Measuring Instrument

   a. Electronic Digital Tachometer.

iii. Temperature & RH Measuring Instrument

   a. TSI VelociCalc model 8386 / VelociCalc model 8345 or equivalent.

iv. Electrical Measuring Devices

   a. Clamp on Voltammeter.
   b. Continuity Meter.

v. Vibration and Noise Levels

   Vibration and alignment field measurements shall be taken for each circulating water pump, water chilling unit, air handling unit and fan driven by a motor over 10 HP. Readings shall include shaft alignment, equipment vibration, bearing housing vibration, and other test as directed by the PMC.

   Sound level readings shall be taken at ten (10) locations in the building as selected by the PMC. The readings shall be taken on an Octave Band analyzer in a manner acceptable to him. The contractor shall submit test equipment data and reporting forms for review. In order to reduce the ambient noise level the readings shall be taken at night. All tests shall be performed in the presence of PMC/Consultant

COOLING TEST REPORT (DUCTABLE UNIT)

PROJECT

_____

COIL DATA	COIL NO.	COIL NO.	COIL NO.	COIL NO.
System Number				
Location				
Coil Type				
No. Rows Fins/In				
Manufacturer				
Model Number				
Face Area, Sq.Ft.				

TEST DATA	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
Air Qty. CFM								
Air Vel.FPM								
Press. Drop In.								
Out. Air DB/WB								
Ret. Air DB/WB								
Ent.Air DB/WB								
Lvg.Air DB/WB								
Air AT								
Press.Drop.PSI								
Entering Refrigerent Temp								
Leaving refrigerant Temp								
Exp.Valve/Refrig								
Refrig. Suction Pr.								
Refrig.Suct.Temp								
Inlet Steam press.								

REMARKS

TEST DATE _____ **READINGS BY** _____

RECTANGULAR DUCT TRAVERSE REPORT

PROJECT_____YSTEM_____

LOCATION / ZONE_____ACTUAL AIR TEMP _____DUCT S.P____

DUCT SIZE_____SQ.FT_____	REQUIRED FPM_____CFM_____	ACTUAL FPM_____CFM_____

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
VELOCITY SUBTOTALS															

REMARKS

TEST DATE_____ READINGS BY _____

GRILLES AND DIFFUSERS

TEST REPORT

PROJECT_____ SYSTEM _____

OUTLET MANUFACTURER_____TEST APPARATUS_____

AREA	OUT LET			DESIGN		PRLIMINARY				FINAL		
SERVED	NO.	TYPE	SIZE	CFM	VEL	VELOR CFM	VEL.OR CFM			VEL	CFM	

REMARKS

TEST DATE_____ READINGS BY _____

VRF TEST REPORT

(TO BE FURNISHED BY INSTALLER)

PROJET _____ UNIT_____

LOCATION_____

MANUF._____ MODEL _____ SERIAL NO. _____

CAPACITY _____ REFRIG _____ STARTER_____ HEATER SIZE ___

COMPRESSOR	DESIGN	ACTUAL		MOTOR STARTER	DESIGN	ACTUAL
Make / Model				Make / Model		
Serial No.				Type		
Type (Digital / Invertor)						
Piping Material				Amps		
Suction Pr / Tem.				O/L Release Range		
Discharge Pr/Temp						
Refrigerant				**EVAPORATOR**	**DESIGN**	**ACTUAL**
Oil Pump Type				Make / Model		
Oil Pressure				No. of Passes		
Oil Failure Switch Pressure				Ref : Level		
Unload Arrangement				Ref : Pressure / Temperature		
Unload Set Points				Ent. Water Temp/Pressure		
Drive				Leaving Water Temp/Pressure		
Compressor Speed				Temperature Difference		
Oil Level				Pressure Difference		
Oil Temperature				Water Quantity CPM		
L P Setting				Relief Valve Setting		
H P Setting				IKW / Ton		
Anti Freeze Setting						
Purge Unit Type						
Purge Operation Checked				**CONDENSER**	**DESIGN**	**ACTUAL**
				Make/Model		
				No. of Passes		
				Ref : Pressure / Temp		
COMPRESSOR MOTOR	**DESIGN**	**ACTUAL**		Ent. Water Temp / Pressure		
Make / Model				Leaving Water Temp/Pressure		
Type				Temperature Difference		
Voltage I_1 I_e I_2 I_3 I_3 I_1				Pressure Difference		
Motor Rated Current				Water Quantity CPM		
Motor F L Current				Relief Valve Setting		

REMARKS

TEST DATE _____READINGS BY _____

SECTION-IV

SCOPE & SPECIFICATIONS_MEP WORKS

INDEX

S.NO. TITLE

[A] ELECTRICAL& MECHANICAL SUMMARY

[B] PLUMBING SUMMARY

1.0General Scope and Specifications of Electrical and Mechanical Works:-

Scope ofwork

Scope of work cover splanning, designing, supply, installation,testingand commissioning of all E & M services such as Electric Sub-Station, D.G.Sets, IEI, External Lighting, Fire alarm, Fire Fighting, Sprinkler System,Solar Power, Basement Ventilation, Lifts & Staircase Access Control-boombarrier, CCTV, Aviation Light, Lightningarrestor required to be provided inthe said scheme as per norms of various IS codes/ NBC 2016 / JDAspecifications/ECBC/CEA, various byelawsand norms of local bodies.The work shall be executed as per scope &specifications of E & M worksgiven hereafter and given in respective head / part of the scheme sub-head. If any services required to make the bldg. / scheme habitable is notcovered in the scope of work, interior and services same shall either bepointed out in pre-bid meetingelse, it shall be presumed that the sameshall be provided within the quoted cost and nothing extra shall be paid onthis account.

The scope of works also covers the preparation of layout plans, drawingsfor E&M schemes before the commencement of work. During execution, if the local bodies etc. require a modification, the same shall be executed without any extracost. Finally, afterexecution, approvals/ NOCs/ clearances from local bodies etc. shall be the responsibility of successfulbidder for which nothing extra is payable in case any modification / extra work is required. All statutoryfees/ charges required for obtaining clearances fromCEA/Local Bodiesshall be paidbytheagency.

Power supply required for construction shall have to be arranged by thebidder at his own costs i/c required for testing & commissioning. Water required for testing of equipment‘s is also in scope of agency.

2.0 General:-

Theseadditionalterms & conditions are applicabletoalltheE&Mworks.

The Agency shall submit within 45 days after award of work an undertakingfrom the OEM ofliftsand DG sets that they shall unconditionally supportthe lowest tenderer / JDA technically throughout the execution of contractas well as for Maintenance/Comprehensive Maintenance Contract for theusefullife ofthesystem,and

OEM shall provide all the spares required for healthy functioning of theequipmentforatleastsevenyearsfromthedateofsupplyofequipment

The agency must study specifications and conditions carefully. The workshallbeexecutedinclosecoordination withtheprogress ofbuilding work.

Theorder of preferenceincaseofanydiscrepancyshallbeasfollowing:

Scope of work Specifications and Conditions, Additional Conditions mentioned in this document.

JDASpecifications forcivilandelectricalasapplicable.

Indian Standard Specifications of BIS including modifications /amendments.Relevant Sections of National Building Code 2016 withup-to-date amendments.

SoundengineeringpracticeasperdirectionsoftheEngineer-in-Charge.Allequipmentsshallbedeliveredwith(i)manufacturer‘stestcertificate,(ii)manufacturer‘stechnicalcatalogues,andinstallation/instruction(O&M)manuals.

Scaffolding&any otherT&Prequired forexecutionofworkshallbearranged by the bidder and nothing extra shall be payable on thataccount.Thelayoutplans/drawings/otherdocumentspertainingtoE&Mservicesshallhavetobesubmittedforevaluation&approval,within45daysofaward ofwork.

Statutoryfeesrequiredtobedepositedforprocessingthecase,shallbeborne bytheagecy.

3.0 InspectionbeforeDispatch

Allroutinetestsshallbeconductedbeforedispatchofequipment‘s.Noequipment shall be dispatched from the manufacture‘s premises without suchtests being conducted and test result recorded. These test certificates shall begiven along with the supply of equipments. TheJDAshall, ifhe so desiresinspect and witness the pre-delivery tests. For this purpose, the agency shallgive 15 days‘ notice. Agency shall arrange for inspection by the department.Agency shall bear expenses of JDA officials for inspection as far as traveling,boarding and / lodging is concerned. However, waiver if any, for inspectionshall be at the discretion of the department without any cost implication butroutinetest&typetestcertificatesshallhave tobesubmittedforequipments.

Prior to dispatch, all equipments shall be adequately protected & insured forthewholeperiodoftransit,storageanderectionagainstcorrosionandincidentaldamagesetc.

4.0 Insurance

The agency shall include storage cum erection insurance including third partyinsurance right from the storage to commissioning of various equipments withbeneficiary as Engineer In-charge. All insurance which the agency is requiredto enter under the contract shall be effected with any authorized generalinsurancecompanyandtheagencyshallproducethepoliciesofinsurance.

5.0 Remedyoffailuretoinsure

If the agency fails to effect and keep in force the insurance referred to in thepreceding sub-clause the department may affect and keep in force any suchinsurance and pay such premium as may be necessary for that purpose andfromtimetotimededucttheamount,sopaidbythedepartment,fromanymoney due or which may become due to bids or recover the same as debitfromthe agency‘sbill.

6.0 Qualityofmaterialandworkmanship

Allpartsofthe equipmentshallbeofsuchdesign,sizeandmaterialtofunction satisfactorily under all rated conditions ofoperation. All componentsoftheequipmentsshallhaveadequatefactorofsafety.Theworkoffabrication and assembly shall conform to sound engineering practice. Themechanical parts subject to wear and tear shall be easily replaceable type.The construction of the equipments shall be such as to facilitate effortlessoperation, inspection, maintenance and repairs. All connections and contactsshallbedesignedtominimizeriskofaccidentalshortcircuitscaused byanimals, birds and vermin etc. All identical items and their component partsshouldbe completely,interchangeable includingspareparts.

7.0 Inspectionandtestingatsite

The installation shall be subject to necessary inspection during every stage oferection, by the JDA or his authorized representative. The successful biddershallprovideall facilitiesand assistance forthepurpose.

The completed installation shall be inspected and tested by the JDAin themanneraswill belaiddown byhim,in consultationwiththeagency.

All instruments and facilities necessary for the tests shall be provided by theagency. All expences regarding testing and inspection shall be bourn by the agency.

8.0Completenessofwork

The installations shall be completed in all respects and putin to operationevenwherecertaindetailshavenotbeenmentioned/leftoutinthesespecifications.Anydiscrepancymaybe broughtoutin pre-bidmeeting.

AllE&MservicessuchasInternalElectricalinstallations,lifts,firefightingsystem & Addressable fire alarm system, DG sets, etc shall be considered fordeclaringcomplete by the Engineer inCharge after trial run of1 month.However,operationandmaintenanceoftheseinstallationsduringthemaintenance / defect liability period of 60 months shall be carried out by theagency.5 years warrentee certificate will be provided by the agency of all the electrical items.

All electrical & mechanical fittings / fixture / appliances, to be provided for thework,shouldhavelatestminimum3-starrating(ofBEE)asavailableinmarket. Since, the proposed construction is for 3-star GRIHA rating, all fittingsandfixturesshall beprovided which suits totheGRIHArating.

9.0 INTERNALELECTRICINSTALLATION(IEI)

TheworkwillbecarriedoutinrecessedPVCconduitwiringsysteminaccordanceofGeneralSpecificationsforElectricalwithamendmentsuptothedateofopeningofbidsandthegoverningspecifications,whichareman datory including makes for some of the important materials to be used inthework.Incaseofambiguitybetweenthetwo,thespecificationsshallprevail.
FRLS PVC insulated Copper conductor multi-stranded wires will be used forpoints,circuit& sub-mainwiring.

Agency shall execute the work as per scale of amenities given elsewhere indocumentafterobtainingnecessaryapprovalofthelayoutforinternalelectrification of all houses, common areas and staircases from Engineer-in-charge. The staircaselighting shall beingroupcontrolsystem.

AllbuildingshallbeprovidedwithModulartypeswitches.Modulartypeswitches,socketsandsteppedtypefanregulators,bellpushalongwithmatchingmounting boxes ofsamemakeshall beused.

TV wiring shall be provided from each outlet to TV junction Box located inBalcony. Choice of Balcony for Mounting TV dish antenna shall depend upondirectionofTVsignalofservice provider.

Telephone outlet point wiring ofeach house shall be terminated in suitablesizeof GI junction box in DUs direct from floor wise telephone tag block onrespectivefloor.However,conduitfortelephonewiringmaybeprovidedthrough branching by providing suitable size of GI box along with suitable tagblock at each floor. The inter connections of

all junction boxes fixed at all floorshallbedoneproperlymakingproperdistributionsystemwiththepriorapproval of Engineer in charge. Contractor shall Providing Telephone cablefromserviceprovider(BSNL/AIRTELetc).However,pipesforlayingfortelephone / LV cables shall be provided by the tenderer as per direction ofEngineer in charge. 3 Telephone cables (10 Pair each) shall be provided fromeachfloor upto MDFlocated inthebasementfor usebyserviceproviders.

Suitablerainprotectioncoversmadeof16SWGgalvanizedMSsheetwherever requiredshallbeprovided.

Lighting fixtures LED Type, Ceiling fans & Exhaust fans for all facilities areasincluding common areas on all floors (Basement, Ground, all floors & Terrace)to be provided by bidder. The model number of fittings and fans shallbe gotapprovedfromtheJDAbeforeexecution.Occupancysensorsshallbeprovidedinliftlobbies,commonwashroomasperdirectionofJDA.

MeterBoards&MainDistributionBoardsasperDISCOMspecification/requirementshallalsobeprovidedbytheagency.threephase415Vsupplyprovisionshall be made.

Meter Boards are normally provided at ground floor level in panel room as perrequirement of the DISCOM & with the approval of the Engineer-in- charge.Energy meters for Common areas (L&P) & for common services shall be gotprovided & fixed from DISCOM. Connection in getting energy meter installedfor common service shall be in the scope of the Agency. However, chargespaidtotheDISCOMshallbereimburseonproductionoforiginaldepositreceipt.

Separateverticalshaftisproposedforlayingofsubmainconduitsfromvariousflooruptogroundlevelshallbe providedforlayingofElectrical,Submains&cables. Man holes& HDPE ducts for cable entry, Cable forPower backup supplyshall also be provided. Cables fromsub-station location upto meter Boards shall be fixed on MS Cable trays suitably suspended fromceiling slab. Sub main wiring conduit from Meter Boards up to Electrical shaft(for vertical distribution) shall be on MS cable suspended. Sub main conduitsin vertical shaft from Meter Board floor upto respective Quarters shall beproperly support on MS suspended / bracket etc& layout of sub main conduitshallbesuchthatensureadequatespaceforfutureserviceability/Maintenance. Shaft layout to be got approved from Engineer-in Charge. Humepipes for takingLTcables up to MeterBoards alongwith brick masonrychambersofsuitablesizeshallbeprovidedbythecontractorwhereverrequired.

Separate shaft shall be provided for laying of Electrical, mechanical & fireservices. DWC pipes for taking L.T. cables up to Meter Boards in the MeterRooms along with brick masonry chambers of suitable size shall be providedbythe agencywhereverrequired.

Laying of DWC /Hume pipes for road crossing or in pucca portion & CC pathetc. for electric / telephone / street lighting cables/ CCTV cable complete withadequatenumberofcable chambersshallbe providedbytheagency.

Aftercompletingthework,necessarytestresultsasenvisagedinIndianElectricity Rules 2005,shall be recorded and submitted to the department.The results shall be within the permissible limits. Test report forms duly signedby authorized person for obtaining electric connections (energy meters) fromPower DistributionCompanybythe agencyshall begiventotheJDA.

Ceiling fans, exhaust fans & LED light fixtures of suitable wattage, call bell inthesebuildingsshallalsobeprovidedbytheagencyas perdirectionofJDA.

Lightning arresters as per IS; 2309 -1989 as amended upto date & aviationlights(LEDType)shall alsobe provided bysuccessfulbidder.

Internal Electrification of all buildings and services infrastructure shall bedonebythecontractoras perlayoutapprovedfromtheJDA.

Ceiling fans, exhaust fans, LED indoor type light fittings & LED outdoor lightfixtures (IP-66) of suitable lumen output / wattage for compound lighting shallalso be provided by the Agency / Contractor as per direction of Engineer inCharge. Luminaire shall be LM 79 and LM 80 tested from NABL accreditedlab.

10.0 BOOMBARRIER

General
Proposed complex shall be provided with Boom Barriers approx. 6m x 2 No.forSecurity.

Proposed scheme of Boom Barriers should not create traffic hindrance but ensuresecuritytothecomplex.

TenderershallhavelistedoutsizeofBoomBarrier& thequantity required.

S.No.	Description	Technicaldetails
1.	Application	Outdoor
2.	Drive	Hydraulictypewithpiston&Hydraulicpump
3.	Version	Lefthandorrighthandas persiterequirement
4.	OpeningtimeorClosingtime	Lessthan5seconds
5.	Logiccontrol	Included/624BLD
6.	Drive	Hydraulictypewithpiston&Hydraulicpump
7.	Powersupply	230+/- 10%VAC,50Hz
8.	Boomspecification	Electromechanical,AluminiumandantiUVraysepoxypowdercoatedbarriercompletewith 24 VDC motor, with control unit box, withencoder, double built-in LED flashing light andfittedtotake additionalaccessories. Anti-UVraysepoxypowdercoated Aluminium barrier 6m barrier round aluminiumboom L = 8550mm dia 60/90 mm, with counterweight, joints and fixed support including a pairof photocells with anodisedaluminium verticalmountings. Colour shall be RAL standard lightcolours, with reflective tapes/strips, if required.The boom shall be swing away type or shall bedetachableboom.Vehicleandthehousing.Theboomshallbereinstatedinasimplemanner by any individual without affecting thefunctionalityofthesystem. TheboomshallhaveREDLEDlightingfor enhancingthevisibilitytothedriverwhileopening&closingofboom barrier.
	Housingdimension	IP 44 protection of Barrier body & IP 54 ControlUnit. All housing and internal parts shall be rust&corrosionfreemetalsoralloysofhighstrengthwithsuitableepoxy/powdercoating asapplicable.
	Finish	Housing-Epoxy/Powdercoated(colourRAL standardlight colours,orangepreferred).

	Power-off	Configurable/Adjustableto 1.0 Remainopen/closed 2.0 Automatedopeningandclosing
	Safety	Buriedloop sensorshallbe usedto preventboombarrierfromclosingonthevehicle. If the vehicle comes over the loop, thebarrier shall not fall over the vehicle. If avehiclecrosses over the loop while the boom is closingdown, the barrier shall go up so that it will nothitthevehicle.Eveniftheboombarrieraccidently hits avehicle while closingdown,the barrier shall immediately go up. The bidderhas to take all the precautionary measures toensure that the barriers will not fall on a vehicleeventhroughmanual operationby operator mistakes.
	Certification	ShallbeCE orISO9001
	Meantimebetween Failures(MTBF):	1millioncycles.Systemdoesnotrequireanygreasing/oiling for1millionoperations.

11.0AVIATIONOBSTRUCTIONLIGHTS:

Provision for mounting LED type aviation obstruction lights of reliable designshallbeprovided ontopofTowerincluding 20mhighmasts lightspoles.

12.0LIGHTNINGPROTECTIONSYSTEM

The earthing system conforming to IS / IEC– 62305 – 2010 for grounding ofall metallic non-current carrying parts of the system shall be provided. Specialearthingwithcopperearthelectrodesandcopperconductorsforspecialequipment/applications hasbeenconsidered.Lightningprotectionsystemwithairtermination/downcomersshall be providedatthe top oftowertomeettherequirementofIS /JDA.

13.0LIFTS

Provision of lifts in the Guest housewillbe kept as per National Building Code-2016 /JDA Specifications considering no of floors, height of the building and speedofelevatorswhichshallbesubmittedtoJDAforapprovalbeforecommencementofwork.Atleastonelift bemadebarrierfreeasperspecifications & passengers capacity to minimum 13 passengers for barrierfreelift. Blockshould have onegoods/Bed lift.

Work of supplying and installation of lifts will be carried out by the agency asperprovisionscontainedinGeneralSpecificationsandlocalbylawsasamended uptodate.

Scope of work of the successful bidder shall be inclusive of the following andshallbe done bytheagencyatnoextracost.

Provision of proper ventilation in machine rooms, lift wells and water proof liftpits including lighting &Powerpointoutlets.

Electric supply to individual lift shall be given by two independent feeders (oneworking & other stand by) from main electrical panel through change overswitch in themachineroom/groundfloorpanel room.

Agency shall furnish the following drawings and data to the JDA in triplicate,forapproval. Agency will provide OEM authorization certificate five year Amc is in scope of agency.

General arrangement drawing.

Detailoffoundationsforequipment,loaddataofvariousassembledequipment‘s. Data will include breaking load on guides, reactions on buffers,reactiononsupportinmachineroom,liftwelletc.

Dimensionsforeveryunitandgroupofunitsforerectionpurpose,asrequired.

The correction/changes, if any, intimated by the JDA shall be incorporatedand three sets of such corrected drawing shall be furnished to the JDA within15 days from the date of approval of drawings. The work shall be executed inaccordancewith the approveddrawings.

Inspection and Testing atSite:

The lift installation shall be subject to necessary inspection during every stageoferection,bytheJDAorhisauthorizedrepresentative.Thebidsshallprovideall facilities and assistanceforthepurpose.

On completion of the installation, all adjustments as necessary shall be madefor the satisfactory performance of the lifts. The completed installation shall beinspected and tested by the JDA in the manner as will be laid down by him, inconsultationwith thecontractor.

TechnicalSpecification

Theliftshallworkonmicroprocessor-basedcontrolsystemwithself-diagnosticfeatures,siteprogrammingtosuitthechangingneedoftheuser.

Theliftshallbesilentinoperation&shallhavesmoothandcontrolledaccelerationandde-accelerationwithlevellingaccuracyof±5mm.

Potential free contacts for each floor position and up and down movement oftheliftshall beprovided in thecontroller.

TechnicalParticulars

Type of lift: Lift withmachineroom.

Rated Speed & Rated load shall be as per NBC 2016 / JDA specification andwiththeapprovalofJDA.

Typeofoperation:Automaticgroupsupervisorycontrolwith/withoutattendant.

Typeofcontrol:A.C.drivevariablevoltagevariableFrequencywithMicroprocessorbasedgroup control system.

Type car doors: Centre opening stainless steel sliding door in the moon rockfinish.

Automatic power operated horizontal sliding-centre opening construction &designandstainless-steelbody.Interiorfinishoftheliftcarshallbeasapproved by JDA. The car shall be complete with toe gourd of adequatedepth,cabinfan,lightfixtures.Caropensinfront only.

Landing doors: Centre opening sliding power operated stainless steel doors &shallhave afireresistance ofnot lessthan onehour.

Type of signal system: All signal & operating fixtures shall be provided withstainless steel faceplates.
Call registration indication in buttons of operating panel.Digitalcarpositionindicatorincar.
Digitalcarpositionindicatorwithup&downdirectiononallfloorsseparatelyforeach lift.

Backlithallcallbuttons onallfloors.
Maintenancefreere-chargeablebattery-operatedalarmbell&emergencylight.
Fireman‘s switchatground floorforeach groupof passengerlift.
Overloadwarningwithvisualindication OVERLOADED‘andaudiobeepof overloading.

Voiceannouncement systemhavingstandardfeatures.

Intercom system in each lift for communication between the passengers in theelevator&firecontrolroom&machineroom(press&speaktype)withrechargeablemaintenancefree batterybackup.
Elevator should be equipped with manual as well as automatic rescue devices(ARD).
Infra-redbeamtypedoorsafetydeviceshallbeprovidedfor fullheightof door.
Minimum04No.ofliftsshallbeprovidedineachtowerincluding01No.BedLift.

TechnicalSpecifications:ForLift/Elevator

	Item	**Specification**
	DesignationofLifts	Passenger/GoodsElevator –GearlesswithMachineRoom
	Capacity	Minimum 13Passenger
	CarSpeed	1.75MPS
	TotalTravel	32mt.(aprox.)
	No.ofStops	7
	ClearOpeningforDoor	800MM(W)x2000MM(H)with advance dooropening,ACO/ATO/Aspersite/Asper OEM
	DoorSafety	FullHeightInfraredLightCurtain
	SafetyDevices	AutomaticRescueDeviceandmanualrescueoperation
	OtherMainFeatures	OverloadDevicewithIndicator
		2hoursfireratedlanding doors
		FullLoadBypass
		EmergencyLight
		S.S. HandrailonRear& BothSideWalls
		AlarmButton&threewayintercom includingwiringandintercominGuardRoom.
		VanityMirrorofstandardsize
		DoorOpenandClose Button(SoftTouch)
		PhaseFailure&PhaseReversalProtection
		FloorAnnouncerwithMusicSynthesizer

	Item	**Specification**

		AntiNuisancecarcallprotection
		Liftdoorshallhavedoornudgingfeature
	MethodofControl	Duplexifnotpossiblethansimplex,Collective,Selective
	Drive/SpeedControl	V3F(VariableVoltageVariableFrequency)withRegenerativeDrive.
	Controller	16/32bitMicroprocessor basedwithinbuilt/externalvoltagestabilizer/Asper OEM withregenerativedrive
	Entrance	Oneat eachfloorleveland onsameside
	LandingEntrance	COPD/TOPDin S.S.honeycombfinish
	CarEntrance	COPD/TOPDin S.S.honeycombfinish
	TractionMachine	PermanentmagnateGearlessMachineplaceddirectlyabovehoist wayinmachineroom
	MachineRoomLocation	MachineRoomontheTop
	FloortoFloorHeight	Asperconceptualdrawings
	CarEnclosures:	
	(a)CarCeiling	S.S.FinishwithLEDLights&centrifugalblower
	(b)CarPanels	S.S.inanti-scratchfinish(Honeycomb)
	(c)CarFlooring	GraniteFlooring
	CarPositionIndicator	Digitalfloorpositionindicatoratall floorsalongwithdirectionofTravelIndicator.
	PowerSupplyinMachineRoom	415V;3 Phase; 50HzAC
	AuxiliaryPowerSupply	SinglePhase220VAC
	MachineFoundation	Themachine willbeplaced directlyabove theHoistWayUponMachineRoomsteelsection, whichshallbe provided bythe bidder
	PitDepth	Minimum1600mm/asavailableatsite
	GuideRails	TheGuideRailsshould be ofsteeldulytoughenedtocarryloadof Car&Passengers andPrecoated steelbeltrelyJoined/ alignedforsmoothrunningof theElevator/AsperrelevantBIS
	BeltDrive	Main hoist belt with poly urethane coated steel belt type shall bewithpulsemonitoringsystem forsaferandprotectiverunand withadequate section and shall be provided into the sockets of springloaded self. Thimbles of spring permit adjustment of uniform belttensionforsmoothoperationoftheelevator.
	Signals	a)Luminoushallbuttonsatall floors.
		b)Digitalhall positionindicatorsatallfloors.
		c)Full length COP with Luminous floor buttons integral in SSfinish.
		d)DigitalCar positionIndicator.
		e)CardirectionIndicator havingmonochromeLCD.
		f)Dooropen and doorclose buttonsin COP
		g)Emergencylight&Emergencyalarmthrough inverter(RechargeableBatteries).
	Typeof Buffers	PitbuffersasperOEM
	ComplianceofAct	NationalBuildingCode2008&asamended
	Guarantee &maintenanceetc.	60 months from the date of handing over of lifts along with freecomprehensivemaintenanceincludingreplacementofdefectiveparts
	MinorBuildingWork	Thebiddershallincludecostof:
		a)SteelPitladder.
		b)Scaffolding inside thehoist wayforerection.
		c)Cutting of walls with repair including all of bolt members,indicatorand buttonboxesetc.inposition.
		d)Sillangles,fasciaplates,Machinebeamsandrolledsteelsectionwithbearingplates forsupportof theMachine if required.
		e)Doorframes.

	Item	Specification
	LicenseandApprovals	The supplier shall prepare the necessary documentation andarrangenecessarypermissionrequiredfortheoperationofliftsfromlocal authorities if applicableonbehalf of theJDA.
	WitnessofTests	Thesuppliershalltest/providefactoryinspectionof theliftinthepresence of Third party/ department Engineer/ Consultants ifdesired.Thedepartmenthoweverreservestherighttowaiveoffthetest.
	Miscellaneous	a)TheTractionCoatedSteelHoist Beltsshall beasperrelevantB/Scode.
		b)CarsafetyandGovernortocontrolexcessivedescendingspeed.
		c)Counterbalanceto promotesmoothand economicoperations.
		d)Terminaland finallimits.
		e)TerminalBuffer.
		f)Controllertocontrolstarting andspeedof Elevatormotorand supplybrakeautomaticallyincase of applicationof anyofthesafetydeviceorpowerfailure.
		g)SteelguidesfortheCarandCounterweight.
		h)Electricityforbonafideuseforcarryingoutexecutionatanypointshall bearrangedbythebidderitself.
		i)Single phase power line with bulkheads bulbs and power pointshall bearrangedinshaftbythesuppliers.
		j)Double earthling at machine room shall be provided by theBidderatthetimeof testing& commissioning.
		K)Watch&ward of thematerial will beresponsibilityof thebidder.

Note:certificatefromliftinspectorshallhavetobeobtainedbythebidderbeforeliftsare putin service.

14.0 FIREFIGHTING(WetRiser&Sprinkler)& ALARM SYSTEM

Firefighting system for the Guest house Building shall be designed as per prevailingguidelines of NBC 2016 and requirement of unified building bylaws Rajasthan.GuidelinesfromJDA mustbefollowed while designing.

Itshallincludefollowing: -

I. Providing Heavy duty M.S ̲C‘ class pipe for external fire lines in ground includingValves,FireHydrants,ExcavationforPipes,Layingofpipes,Paintingofpipeand MakingConnection tosupplysystem.
II. HeavyDutyM.S̲C‘ClassPipeexposedinsidethebuilding,MainsLaterals,Branches,Valves HangersandAppurtenances.
III. HoseReels,Rubberizedfabriclinedhosepipes,Hosecabinets&LandingValves.
IV. PortableFireExtinguishers.
V. FireFighting Pumps.
VI. A StaticUndergroundWater Tank.
VII. TerracetankonVariousBuildings asperNBC.

VIII. Allelectricalworksrelated withfirefightingworks.

DesignBasis:

TypeoftheBuilding–Varioustypesofbuildingsproposedcanbeclassifiedas perNBC-2016 asfollows.

Guest house&Services

Max. height of Buildings- The heights of building

is 26.21 m.References& DesignGuidelineSources

AnIndicativelistofrelevant BIScodes isasbelow:

a. UnifiedBuildingBylaws,Rajasthan.

b. National Building Code of India - (Latest Edition, November 2016 --Part-IV,Fire& LifeSafety)

c. I.S:3844-1989 - Code of practice for installation and maintenance ofinternalfire hydrantsandhosereelson premises.

d. I.S:13039-1991 - Code of practice for external hydrant systemprovisionand maintenance.

e. I.S:2190-1992 - Code of practice for selection, and maintenance offirstaidfireextinguishers.

f. I.S:15105:2002 – Code of Practice for Design and Installation of FixedAutomatic SprinklerFireExtinguishingSystem.

The firefighting system shall be provided as per National Building Code ofIndia2016(PartIV),otherrelevantI.Scodesandaccordingtounifiedbuildingbylawsrajastha n.

Theproposedprovisionsareasfollows.

I. CentralizedStaticUndergroundstoragefiretanksasperNBCforGuest house.TerracetankasperNBCshall be provided.

II. Fire ring main as per NBC should be provided. Connected to externalyard hydrantsplaced@maximum 30mc/cdistance.

III. Wet Riser for Hydrant & Sprinkler System shall be taken in separatehydraulic zones to control the pressure from Main Header in the Plantroom as per requirement. Pumps of Multi stage, multi outlets with lowandhighheadshall beprovided asperrequirement.

InternalHydrants

EachFireHoseCabinetshallbeasperNBC-2016anditslatestamendments,shall alsoConformtothefollowing IS Codes.

IS: 636 Type BIS:903
IS:884-1985

HoseCabinetshallbeprovidedinliftlobby/Podiums/Basementandwillbecovered withfixed glazed door.

FirePumps

Consideringlargebasementarea,itisrecommendedtoprovidethefollowing minimum Fire Pumps (The number of Hydrants connected witheachsetoffirepumpswillnot bemorethan100)infirefightingpumproom.

S.No.	DESCRIPTION	DISCHARGE	HEAD	LOCATION	QTY
1)	Hyd./sprinklerpump	1620LPM	Residualheadof 3.5kg/cm2atfart hestPoint	Plantroom	1 Nos.
2)	Jockeypump	180LPM		Plantroom	1Nos.
3)	DieselFire Pump	1620LPM		Plantroom	1Nos.

Allfire pumpsshall be withpositivesuctionarrangements.

Allmainfirepumpsshallbemulti-stage,multioutlettypeforcreatingpressurezonesorVFDpumpsshallbeprovidedtomaintainuniformpressure.

All the fire pumps shall cut-in automatically based on the pressure settings,soastoensurethattheentirefiremainline,risersetc.arepressurizedona continuousbasis.

Thejockeypumpshallautomaticallycut-outbasedonthepressuresettings. However, the remaining fire pumps shall be off only in the manualmode.

Fire Pump Motors shall be provided with soft starters or variable frequencydrivestarter.

Note 22 of Table 7, Part 4 of NBC- 2016 shall be considered for planning ofNo. ofpumps.Thisnotestatesas follows.

One set of pumps shall be provided for each 100 hydrants or part thereof,withamaximumoftwosets.Incaseofmorethanonepumpsetinstallation,bothpumpssetsshallbeinterconnectedatthedeliveryheaders.

SprinklerSystem

i. Sprinkler System shall be provided for all the basement areas, PodiumParking's,Groundfloorcommonareas andlobbiesetc.

ii. Pendant sprinklers shall be used @ 9 m^2 of built up area, with a center tocenterspacingnotto exceedapproximately3.0meters.

iii. Uprightsprinklersshallbeprovidedforanyfalseceilingareasinlobbies/commonareasetc.ofbasementandsimilarvoidswhicharegreaterthan 800mmin height,ifany.

iv. The sprinklers shall be automatically activated at 68^0C by breaking of theglassbulb in theeventoffire.

v. The sprinkler lines shall be always be pressurized by automatic systemconsisting of an Electrical sprinkler pump. The sprinkler pump shall bebacked up by the main electrical and diesel fire pumps and a separatejockeypump.

vi. Necessary accessories such as installation control valves, Flow Switches,Inspection Test Assemblies etc. shall be provided as per the detailedrequirements.

vii. Generally, for sprinkler system design, IS 15105:2002 shall be followed(Indian Standard forDesign& InstallationofFixed AutomaticSprinklerFire Extinguishing Systems) and where required as nbc-2016 as well asrelevantNFPA Codes shall beconsulted.

viii. SprinklerFlowswitchesshallbemonitored byFireAlarmPanel.

ix. Rampsat alllevelsshallbeprotectedwithsprinklers.

Fire BrigadeConnections:-

All connections for Fire Brigade for inlet, draw out shall be provided as perNBC-2016 andasperunified Building Bylaws.

FireExtinguishers

The following type of portable fire extinguishers shall be provided at all levelsofthetowers,atstrategiclocationsasperrequirements,generallytofollowIS –2190:1992):

a. WaterexpellingtypeasperI.S:15683 -2006
b. ABCPowder TypeasperI.S:15683 -2006
c. 4.5kg,CO2typeasperI.S:15683–2006
d. Mechanicalfoamtypefireextinguisher.

Firedetection&AlarmSystem:-

Fire detection & alarm system in building shall be designed and provided asperNBC-2016(Part-IV,Fire & LifeSafety)

Eachfloorshallhaveaddressablemonitormoduleswhichwilllinkmicroprocessor controlled addressable main panel of each towers/buildings.Detectors incommon areashall be intelligenttype.

Fire detection & alarm system in non-residential buildings shall be designedandprovided as perNBC-2016(Part-IV,Fire& LifeSafety).

Valves&Accessories:-

PN ratingofall valves and accessories shall be selected as perapplication.Allvalvesshallhavesupervisoryswitchwithsignallingtofirealarm panel.

MonitoringbyFire Alarm Panel:-

AutomaticFireAlarmSystemshallbeprovided.TheFireAlarmSystemPanelshallalso monitorthefollowingin additiontoitsown function.

i. SprinklerFlowswitches.
ii. WaterLevelinallFiretanksbothundergroundandterracetanks.
iii. Hydrant&SprinklerPressuresof allzones.
iv. PumpON/OFFStatus.
v. Open/ ClosestatusofallisolationvalveswithsupervisoryswitchI.

Applicable Codes

IS:1239(Part 1 &2)	--	M.S. PipeHeavyduty
IS:14846	--	Sluicevalves(PN1.6)
IS:6392-1971	--	SteelPipe Flanges
IS:554	--	Pipethreadswhere pressuretightjoints are Required
IS:909	--	U/Gfirehydrants,sluicevalvetype
IS: 5312(P-1)	--	NRV
IS:778	--	Gunmetal fullway valves with wheel testedto20kg/cm2 classII
Butterflyvalve--		Theyshallbeofspecifiedquality conformingtoIS:13095orBS:5155
IS:5290	--	Internal hydrantshall comprise-Single HeadedSingleOutletGMLandingValve‖ conforming toType -A‖.
IS:12585	--	Hosetubing(Thermoplastic)
IS:854	--	Hosetubing,Globevalve, Stopcock & Nozzle
IS:636	--	Hose pipes rubber lined woven jacketed(RRL)&63 mmdia,conformingto type -A‖
IS:903	--	Thecouplingsshall beofinstantaneous [Branchpipe,nozzle,springlock type Couplingetc.
IS:15683	--	Portablefireextinguishers

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15.0VENTILATION/EXHAUSTSYSTEM

ThesystemshallbeprovidedasperNationalBuildingCodeofIndia2016andapprovalof ChiefFireOfficer,localFireService,andrelevantI.SCodes.

Following areas shallbemechanically ventilated&exhausted.

Theventilationratesformechanicalventilationofvariousareastobeasper NBC2016 andLocalbylaws.

Basement/Parking Ventilation

Eachbasementlevelshallbeventilatedseparatelybymechanicalmeans.AsperNBC/LocalFireOfficer

Freshairshafts,servingthenumberofbasementsmaybethesamebutexhaustshaftsofeachbasementshall be separate.

Forfirstbasement,40%freshairshallbeassumedtobedrawnthroughtheramps.Whileinsecondandother basement freshair shallbe drawnthroughfresh airfans.

Ventilationofbasementshall beachieved byemployingrequisitenumberofexhaustairfans, tobecalculated,onthe basisofrequiredairchanges.

For parking ventilation, 6 air changes per hour of ventilation shall be achieved as perNBC2016 with amendments.

InFireMode,Ventilationandsmokeextractionforeachfirecompartmentshallhave(6+6=) 12ACPH.

FirecompartmentationofbasementhastobedoneasperNBC2016withamendments.

Theautomaticoperationoffansshallbeinterlinkedwiththefiredetectionsystem.Manualoperation shall also be possible.

AllexhaustfansandMotorsshallberatedforworkinginfire/smokedutyi.e.upto250degreeCelsiusfor2hours.

Freshairsupplyatfloorlevelhavingdropperfrommainductthroughcolumnandexhaust airatceiling level.

16 LT NETWORK

From LT Panels (Non-Essential & Essential) nos. of feeder cables shall be laid formeter rooms/ risers, feeder pillars for external lighting & main panels of E& MServices.

Design ofsubstation willbe based on relevantISCodes in accordance with LoadingasperNBC.SchemeofsubstationsshallbeasperapprovalofJVVNL.

General Guidelines for calculating total installed capacity of substations (KVA) aregivenbelow.

The electrical load shall be worked out as per NBC AndRelevent IS code or as perJVVNLnormsandmustbegotapproved byJDA.

Building DiversityFactor–asper NBCAndReleventISCode.

Power Factor for calculating KVA load = as per NBC AndRelevent IS CodeTransformer LoadingFactor=asper NBC AndReleventIS Code

FutureExpansion takenshouldbe 10%

Transformerstandbycapacityshouldbeminimum 33%

1. Commonservices

I. AllLifts

II. VentilationSystem(Liftlobby, Liftwell&fireshaft)

III. (Normal+Fire)

IV. Basement&Parking –Minimum1.25KW/1000Sq.ft(Lighting&Powerload)

V. FireFightingPumps

VI. WaterSupplyPump

VII. CommonArea(StairCase, Lobby)Light&Power

VIII. StreetLighting

17.0 Acceptable Makes for Electrical Works
Listofapprovedmakes

	DescriptionofItem	**Makes**
	FRLSPVC insulated copper wire /Telephone cable/copper conductor controlcable	L&T/ Havells/ Polycab/Finolex/RR
	HT/LTXLPEaluminumcable	Havells/ Polycab/ KEI/RRKabel
	Co-axialTVcable	L&T/Havells/ Polycab/Finolex
	SteelConduit	RMCON/AKG/BEC ISI Marked
	Conduitfittings	ISImarked

	PVCConduit	AKG /Polycab/JINDAL/ PRECISION

	L.T. Panel/MeterBoard	AdlecMundka/ControlandSwitchgearsPvt.Ltd/L&/TTricolite/SPCElectrotechLtd/Neptune India/Milestone
	MCB/MCBDBandsheetsteelMetal Enclosed industrial socket, plug top and Isolators	Lerand/Schneider / Siemens/L&T/ABB
	Modular type switch/Socket, Telephone socket,cableTVAntenasocket, fan regulator and GI Box	Legrand(Arteor)OrEquvivalentOfHavells/Honeywell/Lutron
	LEDfitting	Philips/Crompton/Wipro/
	Tube/Vane AxialFlowFan	Kruger/Nicotra/Humidin/FlaktwodGreenheck/Airflow
	Ceiling Fan/Exhaustfan(BEE-5Star)	CromptonGreaves/Usha/Orient/havells
	Octagonalsteelpole	Bajaj/Valmont/Utkarsh
	Conical/ DecorativePoles/Bollards	Bajaj/Philips/Wipro/Jaquar
	AirCircuitBreaker	L&T-UPower/Siemens-3WL/ABB-Emax/Schneider-Masterpact-NW
	MCCB	L&T- Dsine/ Schneider- Compact NSX/ABB-Tmax /Legrand DPX3
	Capacitor	Epcos/L&T/ Schneider/ Siemens /CromptonGreaves.
	DigitalVoltmeter /functionmeter/Ammeter	Schenider-conzerv/ Ducati/Secure/AE
	APFCRelay	Epcos/L&T/Siemens/Schneider/Enercon
	Power Contactor –AC 3 rating / capacitordutycontactor/starter/Thyristermodule/ Harmonicreactors.	Siemens/L&T/ABB/Schneider
	11KVHT(VCB)panelOEM	Siemens/Schneider/ ABB/ CromptonGreaves
	DistributionTransformer(oil type)	CromptonGreaves/ABB/Schneider/Siemens/ Bharat-Bijlee
	PackageTypeSubstation	ABB/Schneider/CromptonGreaves
	Solarstreetlightfitting	Philips/Bajaj/Wipro/CromptonGreaves
	Risingmains/busduct	Legrand/Schneider/C&S/GE
	FireExtinguishers	Safex/Minimex/Superex/ Ceasfire
	DieselEngineoperatedPowerGenerating	CumminsIndia/Caterpillar/kirloskar
	AMFPanel	OEM/ OEAof DG Set
	Alternator	Stamford/LeroySomer/Caterpillar
	HDPE/DWCpipe	AKG/ Duraline/Rex
	GI/M.S.Pipe	Jindal(Hissar) /TATA
	StandardM.S.Fittings&GIfittings	JainsonsIndustries/INDUS
	BallValve/ SluiceValve/ CheckValve /Pot/YStrainer/ButterflyValve	Audco/Kirloskar/ Zoloto/ Advance
	PressureSwitch	System Sensor/Indfoss/Denfoss
	LIFTS	Mitsubishi/ Schindler/Kone/OTIS Theagencyhastogiveatleastthreeoptions out of the make mentioned abovefor lift and the department will be free toselect anyone ofthem.
	BMSOperatorWork Station	HP/ Dell/Acer
	BMSControllerandPowerSupply/Software	Siemens/HoneywellEBI/Sauter/TAC(Schneider)/ALC

	BMSControllerHousing	Enclotek /Rittal
	TemperatureSensor&HumiditySensor/Enthalpy Sensor/LuxSensor/ CO Sensor	Siemens/Invensys/Honeywell/Sontay /Greystone/Sauter/Kele/TAC
	Pressure Transmitters/AirVelocityMeter	Siemens/Invensys/Kele/Honeywell/Sontay/Greystone/Sauter/TAC
	FlowMeter	Forbes Marshal/ Kele/ Sontay/ Greystone/Siemens/TAC/Honeywell/Schenitech
	DifferentialPressureSwitch	Siemens/Invensys/Honeywell/Sontay /Greystone/Kele /Sauter
	PhSensor/Conductivity/TDS	ForbesMarshal/EndresHauser/Kele/Sontay/Greystone
	FlowSwitch/LevelSwitch/LevelIndicator	Siemens/Elektronik/Invensys/Honeywell/Sontay/Greystone/TAC
	CurrentTransducer/VoltageTransducer /PowerFactorTransducer / FrequencyTransducer	ABB/SouthemTransducer/Veris/SETO/Sontay/Greystone
	Fire/SprinklerMainPump/JockeyPump	Mather&PlattIndiaLimited/Grundfos/Kirloskar/KSB
	DieselEngine	Cummins/Kirloskar/ Catepillar
	Motor	ABB/ Siemens/ Kirloskar / CromptonGreaves
	AntiVibrationMounting	Kanwal Industrial Corporation/Resistoflex/Ewren
	Starter	L&T/ Siemens / Crompton/ GE / ABB /BCH
	CurrentTransformer(CastResin)	AE/L&T/Kappa
	AntiVibration Pad	Cori/Dunlop/DiamondPipeSupport/Easyflex Flexionics/Resistoflex/Emerald
	Factoryfabricatedduct	Waves/Zeco/Ductofab/GPSpira
	PerforatedwithpowdercoatingM.S./HotdippedG.I.cabletrays	Vinous/Indiana/ steelway/ Slotco/Pilco
	AddressableMulticriteriaSmokeDetectors With base / Addressable Duct Type Smoke Detectors With base/FaultIsolatorwithbase/Add. HeatDetectorswithbase/AddressableManualCall points/AddressableControlModule/Addressable Monitor Module / Sounder/Hooter cum Strobe/ Fire Alarm ControlPanel/PASystemPanel/TelephoneJack /Hand Set/Software/ Speaker	Notifier/Siemens/Bosch/Edward.
	ConventionalFireDetectionandAlarmSystem DetectorPanels ManualCallPointsHooters	Daksh/Agni/ Bosch
	FireSurvivalCable	Fusion Polymer/ Havells/ Bonton/Rallison/BatraHenlay
	Thermo plastic (Textilereinforced)HoseReelISIMark	Mitra/Kesra/ Padmini
	StainlessSteelBrachPipe	Safex/Padmini/GETech / NewAge
	FiremanAxe/InstallationControlValve	Safex/Padmini/GeTech
	2-way/4-wayFBC	Safex/NewAge(Mumbai)/GeTech
	SprinklerHeads	Tyco/ HD/ omaxULlisted

	Pipe Protection Pypcoat (AW4)Wrapping	IWL/Taxa/Mac-polycoat
	RubberBellow	Kanwal Industrial Corporation /Resistroflex/AIP Valves
	WindowSprinkler	Tyco/ HD
	DelugeValve	Safex/Tyco / HD
	Airreleasevalve	Superex/ GeTech/ NewAge/ Safex
	WeldingRods	Ador/Esab/Essar/Advani
	Fastner	Hilti/Fisher
	HoseBox(External)(GIPowderCoated)	SPC Electrotech Ltd/ AdlecMundka/Ambit Switchgear Pvt Ltd/ Milestone/Tricolite
	FlexibleDrop(ULApproved)	Safex/HD/Kofulso (Easyflex)
	GalvanizedSheet Steel	Tata/Jindal/Sail
	IP Based CCTV systemCCTVCameras Bullet, Dome, PTZ CameraNetworkVideoRecorder	Bosch/Axis /Sony
	LED TV	Sony/ LG/Samsung
	Data Networking SystemInformation	Legrand/Molex/Amp
	Cat-6/6ACable	Crestron/Extron/ Kramer
	ManagedSwitchforDataNetwork, CCTV system	Cisco/Hewlett Packard
	Data Racks	D-link/Legrand/Rital
	EPABX	Panasonic/Alcatel/Syltel
	TelephoneHandsets	CISCO/Panasonic/Siemens
	MDFandTelephoneTag Blocks	Krone
	BoomBarriers	Kaba/Magnetic/ SEAA/Makim/ FAAC
	SolarPVModules	SkySolar/Tata Solar
	Inverter(forsolarpowersystem)	Kaco/ Delta/Schneider/SMA
	Cablesforsolarpower (XLPO/XLPE)	Lapp/Havells/Universal/Polycab
	StringCombinerBox	Hensel/ Schneider
	0.2ClassABTCompliantNetMeter	Secure/L&T/Schneider
	WeatherMonitoringStation	SMA/ ABB
	SplitAirconditioners	Daikin/ Hitachi/OGeneral/ Mitsubishi
	VideoDoorPhoneSystemandsmartlocks	Panasonic/ Samsung/ CISCO/ YALE
	Sound system: BGM/ PA System / Theatre/Guest house/Outdoor	BOSE/TWAudio/Aimline
	DigitalSignage	Christie/BARCO/Samsung
	Geyser	RACold/Jaquar/orient/Crompton/AOSmith
	Individualunit UPSInvertorSystem	Eaton/Luminous
	InvertorBattery	Exide/ Amaron

	Consumer Appliances: Chimney, hob, fridge , micro waveoven,Washingmachine	Siemens/Samsung
	Safe	Yale/Godrej/Samsung
	RO	Aquaguard/ Zero-B/Kent

Breaker for MVD is tribution network shall be vacuumcircuit breaker type with minimum 350 MVA short circuit breaking capacity and conforming to IEC 62271-100.

DistributionTransformer (11/0.433KV) shall be either oiltypeoroil typedepending upon location of sub-station/Transformer.

Oil type Distribution Transformer (11/0.433KV) shall confirm to IS2026-1977- Part-I (Energy Efficiency Level-2).

Air Circuit Breaker moulded case circuit breaker shall confirm IS-13947-1, Miniature circuit Breaker shall confirm to IEC /60947-2 or IS8828.

Only material bearing ISI/BIS certifications ECBC/BEE mark shall be used in the work. Where articles of different designs/ makes bearing ISI/BIS certifications are available.

Where material bearing ISI/BIS certifications marks are not available, material conforming to relevant BIS/ ISI shall be used with prior approval of JDA. The decision of JDA above the design/make to be used in the work shall be final & binding on the agency.

If the specifications of any item are not available then the decision of the JDA regarding quality shall be final & binding on the agency.

All matrrial to be used at site shall be got approval from JDA before using at site.

1. PLUMBINGWORKS

The scope of work which the contractor will be required to carry out isdetailedasunder.

(a) ExternalWaterSupply System

- Obtainingnecessaryapprovalandconnection/sfromPHEDforentire water requirement of building proposed for work as per scopeofthisNIT asper Annexure-P1
- Storage
- Treatment
- Waterpumping&waterdistribution system
- GardenHydrantSystem(Irrigationsystem)
- Water supply system should be of cpvc pipes with matchingfittings.

(b) SewerageSystem

- CollectionandConveyance
- ConnectiontoexternalSewerageline

(c) StormWater Drainage System

- Collectionand conveyance
- DisposaltoexternalStormWaterline.

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(d) Internal PlumbingWorks

- Internalwater supplysystem.
- Soil,Waste, vent&Rainwaterpipes.
- Disposalto1st Manhole/stormwaterdrain.
- AllSanitaryFixturesandfittings.

(e) Drainage of basement

(f) Water Supply Pumps

(g) Irrigation system

ApproachforPlanning

Consideringthenatureofactivitiestobeconductedandthetypeofbuildingstobedeveloped, effortsintheapproachfortheplanningofvarioussystems, shallinclude thefollowing considerations:

- There shall be enough safe, clean and potable domestic water onacontinuousbasistoeveryuserofallthebuildingsasperNBC2016.
- Efficient disposalfromtoilets/Wetareas.
- Quick disposalofrainwaterwithoutflooding.
- Nowastage/leakageofwater treatedorotherwise.

ImportantFactorsonPlanning

- To plan the systems in such a way asto minimize the energyrequirements.
- Tomaketheentiresystemefficientandcosteffective.
- To have proper operation and maintenance system, which could becontrolledcentrallyandefficiently
- Tocreateminimumnuisanceand disturbancetotheEnvironment.
- To assist in the development and aesthetic value of the Environmentandlandscaping oftheproject.
- To recycle and reuse the products as much as possible, i.e.rechargingthe underground watersources.
- TouseStandardEngineeringPractices.

WaterSupplySystem

The requirement of water supply will be worked out based on parameters / guidelinesprovidedin NationalBuildingCode-2016andasperfollowingdetails.

S. No.	DescriptionofOccupancy	OccupantLoad as perNBC-2016	Water RequirementAsperNBC-2016		Flowto S.T.P.	
			Flushing	Domestic	Domestic	Flushing
			LPCD	LPCD	%	LPD
1.	ResidentsofHousing Units					
	4bedroomdwellingunitand above.	7Persons/Unit	45	90	80%	100%
2.	MiscFacilities(cuband services)	10Sqm/person	20	25	80%	100%

NOTE:

The Water& sewage flow requirementwill bebasedoncalculationsforwater consumption indicated in Annexure P1. Water schemes and sewagescheme stobe worked outaccordingly.
Capacitiesofundergroundtanks&sewagetreatmentplantstobeconstructedwill beas per detailsindicatedin Annexure P1

ASafety factorof10% willbeaddedinthetotalwaterrequirement.

STPCapacitywill be20 %morethanas workedoutabove asperEIAguidelines.

Source

Thesourceofwatershallmainlybefrom:

1) Municipalwatersupplyconnectionasmuchaspossibletomeettherequirements,fromPHED dept. Rajasthan.
2) Augmentationfromboringtubewellsasperprevailingpracticeandafterobtaining

thenecessarypermissionsfromalltheconcerned authorities.

3) ByrecyclingthetreatedeffluentoftheSTPforFlushingandhorticulturalpurposes.
4) Rainwatershallbeharvestedintheformofinfiltrationwells,toreplenishtheundergroundwateraquifer.

LocationforPlant Room& Storages:

It is proposed to provide Water Supply Storage and pump rooms along withfirefighting pumps & Underground tanks at location which willbe suitablyplacedandwillcovertheentirecampusequallyforbuildingsindicatedin

Annexure P1 and related water requirements & STP capacities indicatedinAnnexureP2.TheU.G.watertanksshallbeintheserviceareaandadjacent to the Plumbing & Fire Fighting plant room having fire pumps,water supply pumps and all other related equipment located at the groundfloorlevel.Theseservicesshallactasacentralizedsystemwithintherespective parts. In the pump room for firefighting no other equipment will beinstalled.

Capacities of UG & OH Storage Tanks shall be designed consideringfollowingparameters:-

i) Undergroundstorageshallbeinadditiontofire fighting Storage.
ii) RawWater 50%ofoneday'srequirement.
iii) TreatedWater50%ofoneday'srequirement.
iv) OHTanks- 50%ofoneday'srequirementofbuilding.
v) The capacities of Raw & Treated Water Tanks at locations will be decidedbased on buildingsproposed tobecoveredbythepumprooms.

*NOTE:ReferenceNBC &RelevantI.S Code.

Pumping,OverheadStorage& DistributionSystem

Water from the Domestic UG tank shall be re-lifted to the overhead tanks ofthe towers through the required set of pumps. The pumps shall be multiple innumber and will be selected as N+N combination i.e. 100 % standby. Thedischarge will be selected for 4hrs of pumping for each zone in two shifts of 2hrs each. Each building shall have its own O. H tank (on terrace) as perrequirement.

Water supply to overhead tanks shall be filled by multiple pumps.Operationof pumps shall be based on manual operation twice a day for each zone.Operating time during each operation will be 2 hours. Water supply pumpswillbe designedto supplywaterthroughtwozones.

From the overhead tanks, distribution of domestic water shall take place byadopting the gravity system. Water shall be supplied by gravity to all userpoints. Pressure reducing valves

and pressure breakers shall be provided forthe lower floors as per NBC-2016 and unified building bylaws. The systemshallbedesignedtoensurerequisitepressuresavailableinalloutlets.

For Flushing of WC's & Urinals, a separate water supply system shall beprovided, consisting of separate Overhead tanks on Terrace, and gravitysupplythroughseparatedown-takes.Thisseparatesystemforflushingshall

ensurethatthetreatedeffluentfromtheSTPisre-used.Emergencyconnectionfornormalpotable Watersupplyshallalsobemadetothissystem.

Watersupplytoflushingoverheadtankswillbeautomaticoperationofpumps. The automatic operation of pumps shall be maintained with the helpof diaphragm type motorized butterfly valves installed near overhead watertanks coupledwithfloattypelevelcontrollersinstalledwithinthetanks.

Transfer pumps for flushing water shall be of variable frequency drive hydro-pneumaticsystem.

All water supply transfer pumps / hydro-pneumatic system shall be providedwith bye-pass connection with flow meters before non-return valves to bye-pass thewaterintoundergroundtankfor pressure balance.

Allmechanicalequipment'sshallhave100%backuptopreventanybreakages inthesystem.

MaterialsforWaterSupply

- All external water supply rising mains laid in ground shall be doubleflanged ductile iron pipes conforming to IS:8329 and class K-9. Thespecialsforductile ironpipes shallbe asperIS:9523 andclassK-12.
- All external water supply rising main in basement ceiling and shafts shallbeGIpipes(class-c)ofrequireddiaasperdesign.
- All water supply piping at terrace & in shafts shall be GI pipes(class-c),compositepipescould be used ifrequired.
- Allwatersupplydistributionpipeslaidwithintoiletsinceilingorinconcealed chases shall be GI pipes(class-c), pipes andheavy dutyfittingsasapprovedbyJDA ifrequiredor SS-316Lcould alsobeused.
- All the external garden hydrant system piping shall be uPVC 10 kg/cm^{2}conformingtoIS4985.

Valves

a) Butterflyvalves(80mmandabove)

Butterflyvalvesshallbeofcentricdiscconstructionwithsinglepiecebodyof CastIronwithdisc ofCF8Stainlesssteelwithnitrileseat,

Stem shall be stainless steel. Butterfly valve shall conform to PN 10/16rating and shallbe provided with suitable matching flanges compatiblewithPN10/16rating ofvalves.

b) Non-returnvalve(80mmandabove)

Castiron Non-return valves of diameter 80 mm and above shall be dualplate non-return valve of PN 10/16 rating with ductile iron disc and SS304spring &hingepin.

c) Ballvalves(65mmandbelow)

Ballvalves shall beleveroperated,screwed typeofgunmetal ball valveofPN10/16 ratingasperIS:318withSSballandSSstemwithmildsteelever.

d) Non-returnvalve(65mmandbelow)

Non-return valves and 65 mm and below shall begun metal non-returnvalveof PN10/16 rating(class2)asperIS:778withscrewedends.

NOTE:-

1) OHTankforFireasperNBC willbe provided on terrace level.
2) Capacities of OH Tanks for Domestic & Flushing Water will be decided as perrequirement.

2. SEWERAGESYSTEM

The domestic sewage generated shall be disposed by gravity system into the firstmanholesaroundthebuilding,whichshallbefinallyconnectedtotheexternalsewerage system as per the Master Plan. The external sewage network shall collectthesewage,andflowbygravityforfurthertreatmentintheproposedsewagetreatmentplant.

Typeof distribution

Generally, all flow shall be by gravity up to the final disposal points. Wherevergravity flow from the discharging units into the external sewer line isnotpossible(i.e.wetareasinbasementsetc.),alocalsewagepumpingsystem

shall be provided either directly to the final disposal point, or into the externalsewer line.

Appurtenances&MaterialSpecificationsfortheSewerageSystem

a) Pipes

i) PVCPipes

For dia 150mm and 200mm Grade depending on site conditions withlaying,jointingand bedding as perIS code.

ii) R.C.C.PipesClassNP2

Minimum dia 250mm and above to be provided as per IS:458, for normalslopesandgeneralsiteconditions.

(i) R.C.CPipesClassNP3

Forroad crossing300mm diaandaboveas perIS:458, fornormalslopesandgeneralsiteconditions.

(ii) Ductileironpipes

For exposed pipes running along the basement ceiling for final disposalto external sewerage system Ductile iron pipes conforming to IS:8329and class K-9. The specials as per IS:9523 and class K-12. Jointing forthesepipesshall be socketandspigottytonjoints.

(iii) Manholes

The manholes shall be constructed of brick masonry as per standardspecifications of National Building Code and shall be having details asfollows:

Type_A'—Rectangular

i) Rectangular of size 900x800mmupto0.90meter depth.
ii) Rectangular ofsize1200x900 mmupto2.5meterdepth.

Type_B'—Circular

i) Circularofsize910mm diafordepthupto1.65 meter.
ii) Circular ofsize1220mmdiafordepthabove1.65m and upto2.3 meterdepth.
iii) Circularofsize1520mmdiafordepthabove2.30meter&upto9meterdepth.

DepthsofManhole

i) On branches —1.0 M

ii) Onlateralsandmains —1.5M– 2.0 M

Spacing

i) Manholes shall be provided at all junctions, change of directions,changeindiameters,asperconnectionrequirementfromeveryunit.

ii) A distance of 30 meters on the main sewer lines, depending on dia ofpipeand local conditions.

ManholeCovers(MaterialCI/DI)

i) Mediumdutyformanholesonserviceroads,havingapproximatetotalweightofframe andcoveras116Kg.

ii) Heavydutyformanholesonmainroads,havingfrequentheavytraffic,havingapproximatetotalweight offrame andcover170-208Kg.

3. DRAINAGESYSTEM

Duetourbanizationofthelandandsharpgrowthinpopulationandthusincreaseinwaterdemandforvarioususes,thefreshwaterisbecomingscarcein most regions of the area. In certain areas due to almost total dependency onthe underground water, the wells and bore wells are getting deeper and deeper.Also,duetoincreaseinpavedsurface/roofareas,theamountofnatural/percolationofrainfallisreducing verydrastically.

Therefore, ithas become necessary to harvest the rain wateras much aspossible. The drainage system needs to be planned with a view to incorporaterainwaterharvestingprinciples, asdetailedinthefollowingsections.

4. INTERNALPLUMBINGSYSTEMS

Sewerage/DrainageSystemAdopted:twopipe(stack)systemsasrecommended in code of practice for soil and waste pipes above ground (I.S:5329 – 1983). This implies there are separate vertical stacks as perthefollowing:

i) Soil Pipes shall carry the wastes from WC‘s & Urinals. Soil pipes shallconnect directly to manhole outside the building. hubless CI Pipe systemwillbe installed in the wholepremises.

ii) Waste Pipes shall carry the wastes from Wash Basins, Sinks, FloorDrains,etc.WastepipesshallconnecttoGullyTrapsoutsidethebuilding,whichshallinturnbeconnectedtotheexternalmanholes.hubless CI Pipein accordance with IS 15905 & ISO6594and UPVC Silent pipe system adaptable to IS 13592 and IS 14735willbe installed in the wholepremises.

iii) RainwaterPipes shall also be providedwhichshall dispose outside thebuildingintotheexternalcatch–basinchambers/externaldrains.

To ensure that the plumbing system is unhindered, all wet – areas shall bedesignedwith thefollowing structuralprovisions:

S.No.	Details	Requirements/Recommendation
a)	Wet Areas slab to beproperly hidden in falsecelling	Nosunk shouldbeinwet areas.**Forbalconies**,100mmsunkenareaisrequired.AllTraps&Soil&Wastepipesshall behanging at ceiling level below, by hanging thepipeswithG.Istructuralsupports/dashfasteners and proper clamping etc. with properslope(1:60).Cleanout plugs shall be provided at the ceilinglevelbelowasperdetailing.All structural Beams at ceiling level should beinverted (Upwards oriented) for balcony areasonly. Cutouts for traps and WC soil pipes shall bemarkedandprovided forexecution.
b)		Thisoptionisrecommendedformost wetareas from the point of view of easy cleaningand maintenance of the plumbing systems, asallpipesareaccessiblefrombelow. Waterresistant,gridfalseceiling(NRC.95)shallbeprovided. hubless CI Pipe and UPVC Silent pipe systemwillbeinstalled inthe wholepremises.

S.No.	Shafts	Size/Details
a)	Main Fire HoseCabinets forsprinklerpipes,firefightingand drainlinetoterracelevel	Niche of 1200 (W) x 900 (D) x 2100 (H) mm sizeCut out of min. size 400 x 600 with in niche V areaV for V Verticals V for Tower up to 2B + G + 8Floors.CabinetofabovesizemaybeprovidedinM.S.(Pre-fabricated)Alternately, FHC may be designed of above size incivil works as per arch/interior finishing details andonlyM.S.Doorprovided.
b)	Plumbing shafts forMainInternalToilets	Exact Shaft size as per detailing of individual wetareas, so that all vertical pipes are exposed and approachable within the shaft. Appropriate Shaft sizestoensure service accessmust be provided for plumbing shafts of all toilets .Access Doors/panelsneedtobeprovidedforevery shaft, at every level,for necessary maintenance /cleaning purposes. Shafts to be designed to besealedat all floor levels.All shafts tobevertically continuous from basementto terrace level.

c)	Rainwater Pipe Shafts	Terrace/Balcony Rainwater pipes to be located inseparate boxing / main plumbing shafts. Size tobereviewedasperdetailing,withfollowingminimumsizes: Appropriate Shaft sizes to ensure service for each250mm,200mminternal,150mminternalDia. PipesAnd100 mminternalDia.Pipe.
d)	Other Shafts /Miscellaneous	Othershaftsmay berequiredasperfinalplanning &clientrequirementsandshallbeprovidedasperdetailing.

RequirementsofInternal Shafts

FixturesandFittings

i) Sanitary fixtures shall be off premium quality and make, as per make list inthetenderdocument.

ii) All CP fittings shall be of standard quality and make, as permake list in thetenderdocument.

MaterialsforInternalPlumbingSoil,Waste&RainwaterPipes

Double stack system shall be proposed for drainage system with separatepipes for soil, waste disposal and rainwater. The soil, waste, vent & rainwaterpipesshall be designedas perNBC-2016.

i) Wastepipefromsinks,washbasins,urinals,allsuspendedandunderground soil, waste and vent pipes and fittings shall be CentrifugallyspunhublessCIPipeinternallycoatedwithfullycrosslinkedepoxycoatings, externally coated with multilayer outside coating with a zinclayer below the cover coat,with SS Coupling joints with EPDM Rubberinaccordancewith IS 15905 & ISO6594.

ii) Forrainwater pipesshallbeUPVCsilent pieswithsilentfittings.

7.0 DRAINAGEOFBASEMENT

Theproposedbasementsandgroundshallbecateringtothe Parkingrequirements for the project, and the services areas such as Plumbing & FireFighting Plant Room, etc. shall also be coming in the podium & basements. Itis also possible that future wet areas such as Maintenance Offices, DriversRestareasarealsoprovidedintheground.Provisionfordrainageisalsotobe made in case ofoperation ofSprinkler System. Therefore, it is necessarytodotheproperplanningofdrainageofthebasement,tocatertothefollowingcircumstances:

i) All necessary precautions shall be taken to prevent any external stormwater from entering into the ground & basement. The site levels shall bedecidedinsuchawaythatthesurfaceflowtakesplaceawayfromtheentrypointsoframpsstaircasesetc.Allcutouts/openingsintothebasementshall beclosed/protected.

ii) Channels shall be provided at the starting and end points of all ramps intothebasements.

iii) All upper basements shall be provided with Floor Drains, and these

drainsshalldischargeintothedrains/channelsinthebasementsbelow.

iv) The basement shall be provided with a network of drain channels, with thefollowingdetails:
   a. Minimum 250-300sMMWidth.
   b. Minimum 150 MM deep at start and a general slope of 1:250 to 1: 300.Accordingly, a minimum filling of approx. 450 mm is required and thefinallocation/layoutofchannelsshallbedependinguponthearchitecturalplansandthe proposedstructuraldetails.
   c. Maximumlengthofchannels shallbeapprox.80meters.
   d. Thedrainchannelsshallbeprovidedwithpropergratingasperarchitectural details.

v) Thedrainchannelsinbasementshallbedischargingintodrainagesumps,which shallbe havingthefollowingdetails:
   a. Minimum 1800 MMDepth.(300mmfreeboard)
   b. Minimumsizeof2000x2000 MM
   c. TheSumpshallbeequippedwithfixedtypesubmersiblesump drainagepumps(1+1Combination),whichshallautomaticallyoperatebased ona levelindicatorandcontrollersystem.
   d. The sump pumps shall discharge the drain water outside the buildinginto theexternalstormwaterdrainagesystem.
   e. Any wet areas for toilets shall be identified by the JDA in the planningstageitselfandthelocationsconfirmedonthedrawings.Forsuchareas, a sewerage sump with automatic submersible sewage sumppumpsshall be provided.
   f. Dedicated Sumps with automatic submersible sewage sump pumps arerecommendedforthePlumbing&FireFightingPlantRooms,DGRooms etc.iflocatedin the basementlevels.

Listof References

1. UnifiedBuildingBylaws.2017
2. Hand book of Water Supply and Drainage, Bureau of IndianStandards.SP-35(S&T)1987.
3. Manual of water supply & Treatment–1997, Central Public Health andEnvironmentalEngineeringOrganization.
4. Manual on Sewerage and Sewage Treatment revised upto 1993 (MinistryofUrbanDevelopment,NewDelhi),(Govt.ofIndia)
5. NationalBuilding Code -2016byBureauofIndian Standards.
6. Code of practice for provision and maintenance of water supplies forfirefightingIS:9668:1990
7. JDABSR2013
8. Otherrelevant ISI codes.
9. Code of basic requirement for water supply, drainage and sanitation IS:1172:1983byBureauofIndianStandards.

8.0 WATERSUPPLYPUMPSPumps

Work under this sub-head consists of furnishing all labour, with appropriateT&P scaffolding & staging as required to completely install pumping systemforvarious watersupply services.

Without restricting to the generality ofthe foregoing, the workofpumpsshallinclude thefollowings:

a) CentrifugalpumpingsystemforDomesticWaterSupply
b) Pumping systemforSoftWaterSupply
c) PumpingsystemforGardenHydrantSystem
d) SumppumpsfordisposalofDrainagefromBasements
e) SumppumpsfordisposalofSewagefromBasements
f) Controller &IndicationSystemforTanks & Pumps
g) Motorcontrolpanels,powerandcontrolcablingandalliedelectrical works.
h) Pipes, valves, accessories, hangers, supports, delivery and suctionfeedersand connectionto proposedpipework.

9.0 IRRIGATION WORKS DesignConsiderations

Source

Due to acute shortage of water in Jaipur primarily treated effluent from STPwillbe utilizedto caterirrigationwaterrequirements.

WaterDemand

Water demandforlandscapingareasshallbecalculatedfrom NBC-2016Part-9 as 6-8 liter/m sq./day for lawns. For shrubs and trees, the lower value canbeadopted.

TypeofIrrigationSystemtoBeAdopted

Followingirrigationsystemshallbe planned.

a. Land irrigation system through ring mains with the help of gardenhydrant points comprising valves and chamber for surface irrigation oflawns.
b. Dripirrigationsystemforshrubs,treesandplantsdistributingwaterthroughanetworkofvalves,pipes,tubing,andemitters.
c. As the water is being used from STP spray sprinkler system is notsuggested.

KeyFactortoBeConsideredInPlanRingofIrrigationSystem

a) The irrigation system shall be designed considering the wind directionslopeandproposedgrade,typeofsoilpercolationandtypeofvegetationtobewatered.
b) Spray irrigation to be designed to avoid dry spotsand spray on topavedareas andunplantedsurfaces.
c) Sprayirrigationistobeavoidedinareasofwidthlessthan3meters.
d) Irrigation hydrants shall be un-obtrusively located and generally at

theedgeofshrubplantingandadditionallyincloseproximatelyto adrainagechamberand catchbasinstoavoid waterlog.

e) Hydrant points shall not be located inside chamber to minimize waterlog from leaking pipes causing various health related hazards. Hydrantsshallbe located 200mmabove theground level.

DistributionSystem

a. The entire distribution for irrigation system will be through network ofindependent pipes connected to STP, planned at two locations within thecampus. The lines feeding to irrigation system shall be independent tothoselines whicharefeedingtocaterflushingwaterequirements.
b. The entire network of irrigation system will be dived in zones with thehelp of isolation valves and sub mains feeding garden hydrant and dripirrigationsystem.

c. The entire water for garden hydrant system/Drip irrigation system will bepumped with help ofmultiple automatic pumps placed in STP plantroom.

Materials

a. All garden hydrant system mains and sub mains and branches shall beuPVCpipes as per IS: 4985 of class 10kg/cm2 rating with matchingfittings.

b. For drip irrigation system LLDP drip tubing of 10kg/cm2 rating with allmatching fittings and special e.g. coupling, tees, bends and reduceretc.,with solenoidvalveassembliesshall beprovided.

c. All pumping system shall be vertical inline stainless steel pump placedin the STP plant room. All electrical works for the pumps includingcontrolcables shall beincluded.

d. Suitable filtration units, disc filters, pressure gauges, air release valvesshallbe provided as accessoriesforirrigationsystem.

e. Materials of valves used in the irrigation system shall be as alreadyspecifiedin watersupplysectionofDBR.

f. Confirmation about adequacy of water head available at site for safeoperatingofthesystemshall be proposedbytheagency.

a) Scope of the work includes preparation of the shop drawings (based on thearchitectural drawings), fabrication, supply, installation and protection of theSignage,tillcompletionand handing over ofthe work.

b) Theitemofworkfortherespectivesignageshallbeconformingto Specificationsandshallcoveralloperations,fabricationsandtheirinstallationsandmaterialsrequiredforfinishedproduct.

c) Thesignageworkshallbegotexecutedthroughspecializedfabricatorhavingexperienceofsimilarworks.TheContractorshallsubmitthecredentials ofsuchfabricatorforthe approvaloftheJDA.

d) TheContractorshallsubmittheDesign,Sizeandinstallationprocedurealong with samples to JDA for approval. Approved samples will be kept atsite till the whole workis completed.

JDA has right to modify the design oftheapprovedsamplesandcontractorisboundtofollowthesewritteninstruction/changesin design/size etc.fromJDA.

e) The Contractor shall submit shop drawings, for approval of the JDA, forfabricating signage with detailing of frame work, if any, along with the fixingdetails. The details of the signage including location, etc. shall be shown inthe shopdrawings.

TheContractorshallprocureandsubmittotheJDA,samplesofvariousmaterialsforthesignage work,forapproval.AfterapprovalofsamplesofmaterialstheContractorshallpreparesample(s)forapprovalofJDA.Thematerial shall be procured and the mass work taken up only after the approval ofthe mock up by the JDA. The mock-up shall be dismantled and removed by thecontractorasperthedirectionsofthe JDA.

24.2(a)onlymaterialbearingISI/BIScertificationsECBC/BEEmarkshallbeusedin the work. Where articles of different designs/ makes bearing ISI/BIScertifications are available.

(b) WherematerialbearingISI/BIScertificationsmarksarenotavailable,material conformingto relevant BIS/ISI shall beused with prior approvalof JDA. The decision of JDA about the design/ make to be used in theworkshall befinal & bindingontheagency.

(c) If the specifications of any item are not available then the decision of theJDAregardingqualityshallbefinal & bindingontheagency.

Allmaterialstobeusedatsiteshallbegotapproved fromJDAbeforeusingatsite.

Section VA
General Conditions of Contract

("Copy of appendix XI of PWF&AR, Govt. of Rajasthan effective from 01.07.99 and subsequent addendumdated 19.03.2001 & 29.03.2001 and other amendments up to date. In case of any typographical error or omission or alteration the original version of the same shall be valid.")

DEFINITIONS

The "Contract" means the documents forming the bid and acceptance thereof and the formal agreement executed between the Jaipur Development Authority and the Contractor, together with the documents referred to therein, including these conditions, Notice inviting Bids, Instructions to Bidders, Special Conditions of Contract, Specifications, Drawings and Designs, Tender and other information submitted by the Contractor and instructions issued from time to time by the Engineer-in-charge and all these documents taken together shall be deemed to form one contract and shall be complementary to another.

In the contract the following expressions shall, unless the context otherwise requires, have the meanings herein respectively assigned to them:-

The "WORKS OR WORK" shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by, or by virtue of the contract contracted to be executed, whether temporary or permanent and whether original, altered, substituted or additional.

The "SITE" shall mean the land an/or the other places on, into or through which work is to be executed under the contract, or any adjacent land, path or street, through which work is to be executed under the contract, or any adjacent land, path or street, which may be allotted or used for the purpose of carrying out the contract.

The "CONTRACTOR" shall mean the individual or firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representatives of such individual or the persons composing such firm or company, the successor of such firm or company and the permitted assign of such individual or firm or company.

The "ENGINEER-IN-CHARGE" shall mean the Executive Engineer In charge of Jaipur Development Authority who shall supervise and be in-charge of the work.

The "GOVERNMENT DEPARTMENT" shall mean the Jaipur Development Authority (JDA).

The "Accepting Authority" shall mean Executive Committee of Jaipur Development Authority.

The "Director" or "Chief Engineer" shall mean Director (Engineering-III) of Jaipur Development Authority.

The 'Superintending Engineer' shall mean the Superintending Engineer-VI of Jaipur Development Authority.

"ESTIMATED COST" shall mean the cost of the work or works as estimated on the basis of the TENDERED rate or rates agreed to between the parties to the contract.

Where the context so requires, words importing the singular only also include the plural and vice-versa. Any reference to masculine gender shall wherever required include feminine gender and vice versa.

Headings and marginal notes to these General Conditions of Contract shall not be deemed to form a part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.

The clause 23 of condition of contract under section 2 of GCC i.e. standing committee for settlement of disputes is read as:

If any question, difference or objection, whatsoever shall arise in any way, in connection with or arising out of this instrument, or the meaning of operation of any part thereof, of the rights, duties or liabilities of either party men, save in so far, as the decision of any such matter, as herein before provided for, and been so decided, every such matter/ constituting a total claim of Rs. 50,000/- or above, whether its decision has been otherwise provided for an whether it has been finally decided accordingly, or whether the rights or obligations of the parities, as the result of such termination, shall be referred for decision to the empowered standing committee, which would consist of the followings:

Jaipur Development Commissioner, JDA, Jaipur -Chairman

Director (Engineering), JDA, Jaipur

Director (Finance), JDA, Jaipur

Director (Law), JDA, Jaipur

Superintending Engineer, JDA, Jaipur

The Engineer-in-Charge, on receipt of application along with nonrefundable prescribed fee, (the fee would be two percent of the amount in dispute, not exceeding Rs. One lac) from the contractor, shall refer the disputes to the committee within a period of three months from the date of receipt of application.

Procedure and application form referring cases for settlement by the Standing Committee shall be, as given in form RPWA 90.

GENERAL CONDITIONS OF CONTRACT

("Copy of appendix XI of PWF&AR, Govt. of Rajasthan effective from 01.07.99 and subsequent addendum up to date. In case of any typographical error or omission or alteration the original version of the same shall be valid.")

Clause 1: Security Deposit

"The security deposit @ 3% of the gross amount of the running bill shall be deducted from each running bill and shall be refunded as per rules on completion of the contract as per terms and conditions. The earnest money deposited shall however be adjusted while deducting security deposit from the first running bill of the contractor. There will be no maximum limit of security deposit.

A contractor may, however, elect to furnish bank guarantee or any acceptable form of security for an amount equal to the full amount of security deposit @ 3% of the work order before or at the time of executing the agreement. In that case earnest money may be refunded only after furnishing of the bank guarantee as above. During the execution of the work or after completion of the work also a contractor may replace the security deposit by furnishing bank guarantee for an equal amount. However, during execution of the work if cost of work exceeds as shown at the time of furnishing bank guarantee, balance security deposit shall be deducted from the Running Account Bills."

No Price variation is payable in this contract.

All compensation or other sums of money payable by the Contractor to Government under the terms of his contract may be deducted from or paid by the sale of a sufficient part of his Security Deposit, or from interest arising therefrom, or from any sums, which may be due or may become due to the Contractor by the Government on any account whatsoever, and in the event of his Security Deposit being reduced by reason of any such deduction or sale as aforesaid, the Contractor shall within ten days thereafter, make good in cash or Bank Guarantee of Nationalized/Scheduled bank, as aforesaid, any sum or sums which may have been deducted from or raised by sale of his Security Deposit or any part thereof.

In case of Bank Guarantee of any Nationalized/Scheduled Bank is furnished by the Contractor to the Government, as part of the Security Deposit and the bank goes into liquidation or, for any reason is unable to make payment against the said Bank Guarantee, the loss caused thereby shall fall on the Contractor and the Contractor shall forthwith, on demand, furnish additional security to the Government to make good the deficit.

The liability or obligation of the bank under the Guarantee Bond shall not be affected or suspended by any dispute between the Engineer-in-Charge and the Contractor, and the payment, under the Guarantee Bond by the bank to the Government shall not wait till disputes are decided. The bank shall pay the amount under the Guarantee, without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the Contractor. The demand, so made, shall be conclusive as regards to amount due and payable by the bank, under the guarantee limited to the amount specified in the Guarantee Bond. The guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

The Bank Guarantee shall remain valid up to the specified date unless extended on demand by the Engineer-in-Charge which shall include the period of completion of the contract and the defect removal period as per terms of the Agreement. Bank's liability shall stand automatically discharged unless a claim in writing is lodged with the Bank within the period stated in the Bank Guarantee including the extended period. After satisfactory completion of the contract and clearance of all dues by the Contractor, the Chief Engineer or duly

authorized Engineer will discharge the Bank Guarantee after expiry of the original or the extended period, as the case may be. In case the date of expiry of the Bank Guarantee is a holiday, it will be deemed to expire on the close of the next working day.

Government is not concerned with any interest accruing to the Contractor on any form of Security (primary or collateral) lodged by him with the bank or any sums payable to sureties obtained by the Bank as counter guarantee to secure its own position. These will be the matters between the Bank and the Contractor.

Clause 2: Compensation for delay

The time allowed for carrying out the work as entered in the tender, shall be strictly observed by the Contractor and shall be reckoned from the 10th day after the date of written order to commence the work is given to the Contractor. If the Contractor does not commence the work within the period specified in the work order, he shall stand liable for the forfeiture of the amount of Earnest Money and Security Deposit. Besides, appropriate action may be taken by the Engineer-in-Charge/competent authority to debar him from taking part in future tenders for a specified period or black list him. The work shall, throughout the stipulated period of completion of the contract, be proceeded with all due diligence, time being essence of the contract, on the part of the Contractor. To ensure good progress during the execution of work, the contractor shall be bound, in all cases in which the time allowed for any work exceeds one month (save for special jobs), to complete 1/8th of the whole of the work before 1/4th of the whole time allowed under the contract has elapsed, 3/8th of the work before ½ of such time has elapsed and 3/4th of work before 3/4th of such time has elapsed. If the contractor fails to complete the work in accordance with this time schedule in terms of cost in money, and the delay in execution of work is attributable to the contractor, the contractor shall be liable to pay compensation to the Government at every time span as below: -

A.	Time Span of full stipulated period	1/4th	1/2th	3/4th	Full
B.	Work to be completed in terms of money	1/8th (Rs. …….)	3/8th (Rs. …….)	3/4th (Rs. …….)	Full (Rs. …….)
C.	Compensation payable by the contractor for delay attributable to contractor at the stage of:	Delay up to one fourth period of the prescribed time span – 2.5% of the work remained unexecuted			
		Delay exceeding one fourth period but not exceeding half of the prescribed time span – 5% of the work remained unexecuted.			
		Delay exceeding half of the prescribed but not exceeding three fourth of the time span – 7.5% of the work remained unexecuted			
		Delay exceeding three fourth of the prescribed time span – 10% of the work remained unexecuted			

Note: In case delayed period over a particular span is split up and is jointly attributable to Government and contractor, the competent authority may reduce the compensation in proportion of delay attributable to Government over entire delayed period over that span after clubbing up the split delays attributable to Government and this reduced compensation would be applicable over the entire delayed period without paying any escalation.

Following illustrations is given: -

First time span is 6 months, delay is of 30 days which is split over as under: -

5 days (attributable to Government) + 5 days (attributable to contractor) + 5 days (attributable to Government) + 5 days (attributable to contractor) + 5 days (attributable to Government) + 5 days (attributable to contractor)

Total delay is thus clubbed to 15 days (attributable to Government) and 15 days (attributable to contractor).

The normal compensation of 30 days as per clause 2 of agreement is 2.5% which can be reduced as 2.5*15/30-1.25% over 30 days without any escalation by competent authority.

Note: The compensation, levied as above, shall be recoverable from the Running Account Bill to be paid immediately after the concerned time span. Total compensation for delays shall not exceed 10 percent of the total value of the work.

The contractor shall, further, be bound to carry out the work in accordance with the date and quantity entered in the progress statement attached to the tender.

In case the delay in execution of work is attributable to the contractor, the spanwise compensation, as laid down in this clause shall be mandatory. However, in case the slow progress in one-time span is covered up within original stipulated period, then the amount of such compensation levied earlier shall be refunded. The Price escalation, if any, admissible under clause 45 of Conditions of Contract would be admissible only on such rates and cost of work, as would be admissible if work would have been carried out in that particular time span. The Engineer-in-Charge shall review the progress achieved in every time span, and grant stagewise extension in case of slow progress with compensation, if the delay is attributable to contractor, otherwise without compensation.

However, if for any special job, a time schedule has been submitted by the Contractor before execution of the agreement, and it is entered in agreement as well as same has been accepted by the Engineer-in-charge, the Contractor shall complete the work within the said time schedule. In the event of the Contractor failing to comply with this condition, he shall be liable to pay compensation as prescribed in forgoing paragraph of this clause provided that the entire amount of compensation to be levied under the provisions of this Clause shall not exceed 10% of the value of the contract. While granting extension in time attributable to the Government, reasons shall be recorded for each delay.

Clause 3: Risk & Cost Clause

The Engineer-in-charge or the Competent Authority defined under rules may, without prejudice to his rights against the Contractor, in respect of any delay or inferior workmanship or otherwise, or any claims for damages in respect of any breaches of the contract and without prejudice to any rights or remedies under any of the provisions of this Contract or otherwise, and whether the date for completion has or has not elapsed, by notice in writing, absolutely determine the Contract in any of the following cases:

If the Contractor having been given by the Engineer-in-charge, a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improper or un- workman like manner shall omit to comply with the

requirements of such notice for a period of seven days, thereafter, or if the Contractor shall delay or suspend the execution of the work so that either in the judgement of the Engineer-in-charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion or he has already failed to complete the work by that date,

If the Contractor, being a company, shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager, on behalf of a creditor, shall be appointed or if circumstances shall arise, which entitle the court or creditor to appoint a receiver or a manager or which entitle the court to make a winding up order,

If the contractor commits breach of any of the terms and conditions of this Contract,

If the contractor commits any acts mentioned in, clause 19 thereof.

When the Contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in charge on behalf of the Governor of Rajasthan shall have powers: -

To determine or rescind the contract, as aforesaid (of which determination or rescission notice in writing to the Contractor under the hand of the Engineer-in charge shall be conclusive evidence), upon such determination or rescission, the earnest money, full security deposit of the contract shall be liable to be forfeited and shall be absolutely at the disposal of Government.

To employ labour paid by the Department and to supply materials to carry out the work or any part of the work, debiting the Contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer-in-charge shall be final and conclusive against the contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates, as if it had been carried out by the Contractor under the terms of this Contract. The certificate of the Divisional Officer, as to the value of the work done, shall be final and conclusive evidence against the Contractor provided always that action under the sub-clause shall only be taken after giving notice in writing to the Contractor. Provided also that; if the expenses incurred by the Department are less than the amount payable to the Contractor at his agreement rates, the difference shall not be paid to the Contractor.

After giving notice to the contractor to measure up the work of the contractor and to take such part thereof, as shall be unexecuted out of his hands, and to give it to another contractor to complete, in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess, the certificate in writing of the Engineer-in-charge shall be final and conclusive) shall be borne and paid by the original Contractor and may be deducted from any money due to him by Government under this contract or on any other account whatsoever, or from his Earnest Money, Security Deposit, Enlistment Security or the proceeds of sales thereof, or a sufficient part thereof, as the case may be. In the event of any one or more of the above courses being adopted by the Engineer-in-charge, the Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of contract. And, in case action is taken under any of provisions aforesaid, the Contractor shall not be entitled to recover or be paid, any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-charge has certified, in writing, the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

Clause 4: Contractor remains liable to pay compensation, if action not taken under clause 3

In any case in which any of the powers conferred by clause 3 hereof, shall have become exercisable and the same shall have not been exercised, the non-exercise, thereof, shall not constitute waiver of any of the conditions hereof, and such power shall, not withstanding, be exercisable in the event of any future case of default by the Contractor for which, by any clause or clauses hereof, he is declared liable to pay compensation amounting to the whole of his Security Deposit /Earnest Money/Enlistment security and the liability of the Contractor for past and future compensation shall remain unaffected.

Powers to take possession of, or require removal, sale of Contractor's plant

In the event of the Engineer-in-Charge putting in force, powers vested in him under the preceding Clause 3 he may, if he so desires, take possession of all or any tools, plants, materials and stores, in or upon the works or the site, thereof or belonging to the contractor or procured by him and intended to be used for the execution of the work or any part thereof, paying or allowing for the same in account, at the contract rates or, in case of these not being applicable, at current market rates, to be certified by the Chief Engineer or duly authorized Engineer (whose certificate thereof, shall be final and conclusive), otherwise the Engineer-in-Charge may, by notice in writing to the contractor or his clerk of the works, foreman or other authorized agent, require him to remove such tools, plant, materials or stores from the premises (within a time to be specified in such notice), and in the event of the contractor failing to comply with any requisition, the Chief Engineer or other duly authorized Engineer may remove them at the contractor's expenses, sell them by auction or private sale on account of the Contractor and at his risk in all respects, and the certificate of the Chief Engineer or other duly authorized Engineer, as to the expense of any such removal, and the amount of the proceeds and expense of any such sale shall be final and conclusive against the Contractor.

Clause 5: Extension of time

If the contractor shall desire an extension of the time for completion of the work on the ground of his having been unavoidably hindered in its execution or on any other grounds, he shall apply, in writing, to the Engineer-in-Charge within 30 days of the date of the hindrance, on account of which he desires such extension as aforesaid, and the Authority Competent to grant extension under the rules/delegations of power or other duly authorized Engineer shall, if in his opinion, (which shall be final) reasonable grounds be shown therefore, authorize such extension of time, if any, as may, in his opinion, be necessary or proper, if the period of completion of contract expires before the expiry of the period of one month provided in this clause, the application for extension shall be made before the expiry of the period stipulated for completion of the contract. The competent authority shall grant such extension at each such occasion within a period of 30 days of receipt of application from contractor and shall not wait for finality of work. Such extensions shall be granted in accordance with provisions under clause (2) of this agreement.

Clause 5 A: Monthly Return of Extra Claims

Contractor has to submit a return every month for any work claimed as extra. The Contractor shall deliver the return in the office of the Executive Engineer and obtain Receipt Number of the Receipt Register of the day on or before 10th day of every month during the continuance of the work covered by this contract, a return showing details of any work claimed as extra by the contractor which value shall be based upon the rates and prices mentioned in the contract

or in the Schedule of Rates in force in the District for the time being. The contractor shall be deemed to have waived all claims, not included in such return, and will have no right to enforce any such claims not included, whatsoever be the circumstances.

Clause 6: Final Certificate

On completion of the work, the contractor shall send a registered notice to the Engineer-in-charge, giving the date of completion and sending a copy of it to the officer accepting the contract, on behalf of the Governor and shall request the Engineer-in-charge to give him a certificate of completion, but no such certificate shall be given nor shall the work be considered to be complete until the contractor shall have removed from the site on which the work shall be executed, all scaffolding, surplus materials and rubbish and cleared off the dirt from all wood work, doors, walls, floors, or other parts of any building in, upon or about which the work is to be executed or of which he may have possession for the execution thereof, he had filled up the pits. If the contractor shall fail to comply with the requirements of this Clause as to removal of scaffolding, surplus materials and rubbish and cleaning off dirt and filling of pits on or before the date fixed for completion of the work, the Engineer-in-charge may, at the expense of the contractor, remove such scaffolding, surplus materials, and the rubbish and dispose of the same, as he thinks fit, and clean off such dirt and fill the pits, as aforesaid, and the contractor shall forthwith pay the amount of all expenses, so incurred, and shall have no claim in respect of any such scaffolding or surplus materials, as aforesaid, except for any sum actually realized by the sale thereof. On completion, the work shall be measured by the Engineer-in-charge himself or through his subordinates, whose measurements shall be binding and conclusive against the contractor. Provided that, if subsequent to the taking of measurements by the subordinate, as aforesaid, the Engineer-in-charge had reason to believe that the measurements taken by his subordinates are not correct, the Engineer-in-charge shall have the power to cancel the measurements already taken by his subordinates and acknowledged by the Contractor and to take measurements again, after giving reasonable notice to the Contractor, and such re-measurements shall be binding on the Contractor.

Within thirty days of the receipt of the notice, Engineer-in-charge shall inspect the work and if there is no visible defects on the face of the work, shall give the Contractor, a certificate of completion. If the Engineer-in-charge finds that the work has been fully completed, it shall be mentioned in the certificate so granted. If, on the other hand, it is found that there are certain visible defects to be removed, the certificate to be granted by Engineer-in-charge shall specifically mention the details of the visible defects along with the estimate of the cost for removing these defects. The final certificate of work shall be given after the visible defects pointed out as above have been removed.

Clause 7: Payment on Intermediate Certificate to be regarded as advance

No payments shall be made for works estimated to cost less than rupees twenty-five thousand, till after the whole of the works shall have been completed and a certificate of completion given. But in the case of works estimated to cost more than rupees twenty five thousand, the Contractor shall on submitting the bill therefore, be entitled to receive a monthly payment proportionate to the part, thereof, then approved and passed by the Engineer-in-charge, whose certificate of such approval and passing of sum, so payable, shall be final and conclusive. Running Account Bill shall be paid within 15 days from presentation. But all such intermediate payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed, and shall not preclude the requiring of bad, unsound and imperfect or unskillful work to be removed and taken away and re-constructed or re-erected, or considered as an admission of the due

performance of the contract, or any part thereof, in any respect, or the accruing of any claim, nor shall it conclude, determine, or effect in any way the powers of the Engineer-in-charge under these conditions or any of them to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be made/submitted by the Contractor within one month of the date fixed for completion of the work, otherwise the Engineer-in-charge's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on all parties.

Clause 7A: Time Limit for Payments of Final Bills

The final bill shall be paid within 3 months on presentation by the contractor after issuance of final completion certificate in accordance with clause 6 of the conditions of contract. If, there shall be any dispute about any item(s) of the work, then the undisputed item(s) only, shall be paid within the said period of 3 months. If a final bill (which contains no disputed item or disputed amount of any item) is not paid within the period of three months from presentation of final bill or 6 months from the date of receipt of registered notice regarding completion of work in accordance with clause 6 of the conditions of the contract, the defects, if any, shall be brought to the notice of the higher authority. The period of 3 months shall commence from the date of rectification of the defects. The higher authority shall ensure that in no case final bill should be left unpaid after 9 months from the receipt of registered notice regarding completion of work. The contractor shall submit a memorandum of the disputed items along with justification in support within 30 days from the disallowance thereof, and if he fails to do so, his claims shall be deemed to have been fully waived and absolutely extinguished.

Clause 8: Bills to be submitted on completion of specified stage of work

In case of Lump Sum contract, bills will be submitted by the contractor on completion of various stages of work as specified in the contract document. The claim as far as admissible, authorized or paid, if possible, before expiry of 10 days from the presentation of the bill. The claims for additions & alterations, if any, may also be included in the bills if their measurements have been recorded and checked.

Clause 8A: Bills to be submitted on completion of specified stage of work

In case of Lump Sum contract, bills will be submitted by the contractor on completion of various stages of work as specified in the contract document. The claim as far as admissible, authorized or paid, if possible, before expiry of 10 days from the presentation of the bill. The claims for additions & alterations, if any, may also be included in the bills if their measurements have been recorded and checked.

Clause 8B: Recovery of Cost of Preparation of the Bill

In case of contractor of class A and AA do not submit the bill within time fixed, the Engineer in Charge may prepare the bill as per the provision of clause 8 of the general conditions of the contract but @ 0.5 % of amount of such a bill shall be made and credited to the general revenue on account of preparation of bill.

Clause 9: Bills to be on printed forms

The Contractor shall submit all bills on the printed forms, to be had on application, at the office of the Engineer-in-charge and the charges in the Bills shall always be entered at the rates specified in the tender or in the case of any extra work ordered in pursuance of these conditions, and not mentioned or provided for in the tender, at the rates hereinafter provided for such work.

Clause 9A: Payments of Contractor's Bills to Banks

Payments due to the Contractor may if so desired by him, be made to this Bank instead of direct to him, provided that the contractor has furnished to the Engineer-in- Charge(I)an authorization in the form of a legally valid document, such as a Power of Attorney conferring authority on the Bank to receive payments, and (ii) his own acceptance of the correctness of the account made out, as being due to him, by Government, or his signature on the bill or other claim preferred against

Government before settlement by the Engineer-in-Charge of the account or claim, by payment to the Bank. While the receipt given by such bank shall constitute a full and sufficient discharge for the payment, the Contractor should, whenever possible, present his bill duly receipted and discharged through his Banker. Nothing, herein contained, shall operate to create in favor of the Bank any rights vis-a-vis the Governor.

and stores.

Clause 10: Rejection of materials procured by the Contractor

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion, are not in accordance with the specifications and, in case of default, the Engineer-in-Charge shall be at liberty to employ other person(s) to remove the same without being answerable or accountable for any loss of damage, that may happen or arise to such materials to be substituted thereof, and in case of default, Engineer-in-Charge may cause the same to be supplied and all costs, which may attend such removal and substitution, are to be borne by the Contractor.

Clause 10B: Penal rate in case of excess consumption

The Contractor shall also be charged for the materials consumed in excess of the requirements calculated on the basis of standard consumption approved by the department, at double of the issue rate including storage and supervision charges or market rate, whichever is higher. A Material Supply and Consumption Statement, in prescribed Form RPWA35A shall be submitted with every Running Account Bill, distinguishing material supplied by the Government and material procured by the Contractor himself. The recovery for such material shall be made from Running Account Bill next after the consumption and shall not be deferred. Certificate of such nature shall be given in each Running Account Bill.

Clause 10 C: Hire of Plant and Machinery

Special Plant and Machinery, required for execution of the work, may be issued to the Contractor, if available, on the rates of hire charges and other terms and conditions as per departmental Rules, as per Schedule annexed to these conditions. Rates of such Plant & Machinery shall be got revised periodically so as to bring them at par with market rate.

Clause 11: Works to be executed in accordance with specifications, Drawings, Orders etc.

The Contractor shall execute the whole and every part of the work in the most substantial and satisfactory manner and both as regards materials and otherwise in every respect, in strict accordance with the Specifications. The Contractor shall also conform exactly fully and faithfully to the designs, drawings (either designed by department or designed by contractor and approved by Engineer-in-charge during additional execution) and instructions in writing relating to the work signed by the Engineer-in-charge and lodged in his office and to which the Contractor shall be entitled to have access at such office or on the site of the work for the purpose of inspection during office hours and the Contractor shall, if he so require, be

entitled, at his own expense, to make or cause to be made copies of specifications and of all such designs, drawings and instructions, as aforesaid. A certificate of executing works as per approved design, specifications etc. shall be given on each Running Account Bill.

The specifications of work, material, methodology of execution, drawings and designs shall be signed by the Contractor and Engineer-in-charge while executing agreement and shall form part of agreement.

Clause 12:

The Engineer–in–charge shall have power to make any alterations, omissions or additions to or substitutions for the original specifications, drawings, designs and instructions, that may appear to him to be necessary during the progress of the work and the contractor shall carry out the work in accordance with any instructions which may be given to him in writing signed by the Engineer–in-charge and such alterations, omission, additions or substitutions shall not invalidate the contract and any altered, additional or substituted work, which the contractor may be directed to do in the manner above specified as part of the work, shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work. The time for the completion of the work shall be extended in the proportion that the altered, additional or substituted work bears to the original contract work, and the certificate of the Engineer-in-charge shall be conclusive as to such proportion. The rates for such additional, altered or substituted work under this clause shall be worked out in accordance with the following provisions in their respective order:

If the rates for the additional, altered or substituted work are specified in the contract for the work, the contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the contract for the work.

If the rates for the additional, altered or substituted work are not specifically provided in the contract for the work, the such rates will be derived from the rates for a similar class of work as are specified in the contract for the work.

If the rates for the altered, additional or substituted work cannot be determined in the manner specified in the sub-clauses (i) to (ii) above, then the rates for such composite work item shall be worked out on the basis of the concerned Schedule of Rates of the District/area specified above minus/plus the percentage which the total tendered amount bears to the estimated cost of the entire work put to tender. Provided always that if the rate for a particular part or parts of the item is not in the Schedule of Rates, the rate for such part or parts will be determined by the Engineer-in-Charge on the basis of the prevailing market rates when the work was done.

If the rates for the altered, additional or substituted work item cannot be determined in the manner specified in sub-clauses (i) to (iii) above, then the contractor shall within 7 days of the date of receipt of order to carry out the work, inform the Engineer- in – Charge of the rate which it is his intention to charge for such class of work supported by analysis of the rate or rates claimed and the Engineer-in-Charge shall determine the rate or rates on the basis of prevailing market rates, and pay the contractor accordingly. However, the Engineer-in-Charge, by notice in writing, will be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner, as he may consider advisable. But under no circumstances, the contractor shall suspend the work on the plea of non-settlement of rates on items falling under the clause.

Clause 13: No compensation for alteration in or restriction of work to be carried out.

If, at any time after the commencement of the work the Government shall, for any reason, whatsoever, not require the whole work, thereof, as specified in the tender, to be carried out, the Engineer-in-charge shall give notice, in writing, of the fact to the Contractor, who shall have no claim to any payments or compensation, whatsoever, on account of any profit or advantage, which he might have derived from the execution of the work in full but which he did not derive in consequence of the full amount of the work not having been carried out. Neither, shall he have any claim for compensation by reason of alterations having been made in the original specifications, drawings, and design, and instructions, which shall involve any curtailment of the work, as originally contemplated. Provided, that the Contractor shall be paid the charges for the cartage only, of materials actually brought to the site of the work by him for Bonafied use and rendered surplus as a result of the abandonment or curtailment of the work or any portion thereof, and taken them back by the Contractor, provided however, that the Engineer-in-charge shall have, in all such cases, the option of taking over all or any such materials at their purchase price or at local market rates whichever may be less. In the case of such stores, having been issued from Government Stores, charges recovered, including storage charges, shall be refunded after taking into consideration any deduction for claim on account of any deterioration or damage while in the custody of the contractor, and in this respect the decision of the Engineer-in-charge shall be final.

Clause 14: Action and compensation payable in case of bad work

If, it shall appear to the Chief Engineer or any authorized authority or the Engineer-in- charge or his subordinates in-charge of the work, or to the committee of the retired officers/officers appointed by the State Government for the purpose that any work has been executed with unsound, imperfect or unskillful workmanship, or with material of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted, or otherwise not in accordance with contract, the Contractor shall on demand in writing from the Engineer-in-charge, specifying the work/materials or articles complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, will rectify or remove and reconstruct the work, so specified, in whole or in part, as the case may be, remove the materials or articles, so specified, and provide other proper and suitable materials or articles at his own cost, and in the event of his failing to do so, within a period to be specified by the Engineer-in- Charge in his demand as aforesaid, then the Contractor shall be liable to pay compensation at the rate of one percent, on the tendered amount of work for every week not exceeding ten percent, while his failure to do so shall continue, and in the case of any such failure, the Engineer-in-Charge may rectify or remove and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be, at the risk and expense, in all respects of the contractor.

Clause 15: Work to be open to inspection: Contractor or his responsible Agent to be present

All work, under or in course of execution or executed in pursuance of the contract shall, at all times, be opened to inspection and supervision of the Engineer-in-charge and his superior officers e.g. Superintending Engineer, Additional Chief Engineer, Chief Technical Engineer, Chief Engineer, and his subordinates and any other authorized agency of the Government and the contractor shall, at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer-in-charge or his subordinate and any other authorized agency of Government or committee of retired officers/officers appointed by the State Government for the purpose to visit the works shall have been given to the

Contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for the purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the Contractor himself.

Clause 16: Notice to be given before any work is covered up

The Contractor shall give not less than 7 days' notice, in writing, to the Engineer-in- charge or his subordinate-in-Charge of the work, before covering up or otherwise placing beyond the reach of measurement, any work in order that the same may be measured, and correct dimensions thereof, be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up or place beyond the reach of measurement any work without the consent in writing of the Engineer-in- Charge of the work, and if, any work shall be covered up or placed beyond the reach of measurement without such notice having been given or consent obtained, the same shall be uncovered at the Contractor's expense or in default, thereof, no payment or allowance shall be made for such work, or for the materials with which the same was executed.

Clause 17: Contractor liable for damage done and for imperfections

If the Contractor or his work people or servants shall break, deface, injure or destroy any part of a building, in which they may be working or any building, road, fence, enclosure, or cultivated ground contiguous to the premises on which the work or any part of it is being executed, or if any damage shall happen to the work, while in progress, from any cause, whatsoever, or any imperfections become apparent in it, within a period specified in clause 37, after a certificate, final or otherwise of its completion, shall have been given by the Engineer-in-charge, may cause the same to be made good by other workmen and deduct the expense (of which the certificate of the Engineer-in-charge shall be final) from any sums that may be then, or at any time thereafter, may become due to the Contractor, or from his security deposit, or the proceeds of sale thereof, or of a sufficient portion thereof.

Clause 18: Contractor to supply plant, ladders, scaffolding etc.

The Contractor shall arrange and supply, at his own cost, all material (except such special materials, if any, as may, in accordance with the contract, be supplied from the Engineer-in-charge's stores), plants, tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary works requisite or proper for the proper execution of the work, whether original, altered, or substituted, and whether included in the specification or other documents, forming part of the Contract, or referred to in these conditions, or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer in- Charge, as to any matter as to which, under these conditions, he is entitled to be satisfied or which he is entitled to require, together with carriage thereof, to and from the work. The Contractor shall also arrange and supply, without charge, the requisite number of persons with the means and materials, necessary for the purpose of setting out work and counting, weighting and assisting in the measurement or examination at any time and from time to time of the work, or materials. Failing his so doing, the same may be provided by the Engineer- in-charge, at the expense of the Contractor, and the expenses may be deducted from any money due to the Contractor under the Contract, or from his Security Deposit or the proceeds of sale thereof, or a sufficient portion thereof. The Contractor shall also provide all necessary fencing and lights required to protect the public from accident and shall be bound to bear the

expenses of defense of every suit, action or other proceeding at law, that may be brought by any person for injury sustained owing to neglect of the above precautions, and to pay any damages and costs which may be awarded in any such suit, action proceeding to any such person or which may, with the consent of the Contractor, be paid to compromise any claim by any such person.

Clause 19: Work not to be sub-let, Contract may be rescinded and Security

Deposit and Performance Forfeited for sub-letting, bribing or if Contractor becomes insolvent.

The Contractor shall not be assigned or sublet without the written approval of the Director Engineer, and if the contractor shall assign or sublet his contract or attempt so to do, or become insolvent, or commence any insolvency proceedings or mark any composition with his creditors, or attempt so to do, or if any bribe, gratuity, gift, loan, requisite reward or advantage, pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the Contractor or any of his servants or agents to any public officer or person, in the employ of Government, in any way, relating to his office or employment, or if, any such officer or person shall become, in any way, directly or indirectly, interested in the contract, the Chief Engineer may, thereupon, by notice, in writing, rescind the contract and Security Deposit of the Contractor shall, thereupon, stand forfeited and be absolutely at the disposal of Government and the same consequences shall ensure as, if the contract had been rescinded under Clause 3 hereof, and in addition the Contractor shall not be entitled to recover or be paid for any work therefore, actually performed under the Contract.

Clause 20: Sums payable by way of compensation to be considered as reasonable compensation without reference to actual loss

All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of Government without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

Clause 21: Changes in constitution of firm

Where the Contractor is a partnership firm, the previous approval, in writing, of the Engineer-in-charge shall be obtained before any change is made in the constitution of the firm. Where the Contractor is an individual or a Hindu undivided family business concern, such approval, as aforesaid, shall likewise be obtained before the Contractor enters into any partnership agreement thereunder the partnership firm would have the right to carry out the work thereby undertaken by the Contractor. If, previous approval, as aforesaid, is not obtained, the Contract shall be deemed to have been assigned in contravention of Clause 19 hereof, and the same action may be taken, and the same consequences shall ensure, as provided in the said clause 19.

Clause 22: Work to be under direction of Engineer-in-charge

All the works, to be executed under the contract, shall be executed under the direction and subject to the approval, in all respect, of the Engineer-in-charge of the Government of Rajasthan for the time being, who shall be entitled to direct, at what point or points, and in what manner, they are to be commenced, and from time to time, carried on.

Clause 23: Standing Committee for Settlement of Disputes

If any question, difference or objection, whatsoever shall arise in any way, in connection with or arising out of this instrument, or the meaning of operation of any part thereof, or the rights,

duties or liabilities of either party then, save in so far, as the decision of any such matter, as herein before provided for, and been so decided, every such matter constituting a total claim of Rs. 50,000/- or above, whether its decision has been otherwise provided for and whether it has been finally decided accordingly, or whether the Contract should be terminated or has been rightly terminated, and as regards the rights or obligations of the parties, as the result of such termination, shall be referred for decision to the empowered Standing Committee, which would consist of the followings:-

Jaipur Development Commissioner, JDA, Jaipur -Chairman

Director (Engineering), JDA, Jaipur

Director (Finance), JDA, Jaipur

Director (Law), JDA, Jaipur

Superintending Engineer, JDA, Jaipur - Member Secretary

The Engineer-in-charge, on receipt of application along with non-refundable prescribed fee, (the fee would be two percent of the amount in dispute, not exceeding Rs. one Lac) from the Contractor, shall refer the disputes to the committee, within a period of three month from the date of receipt of application. Procedure and Application for referring cases for settlement by the Standing Committee shall be, as given in Form RPWA 90.

Clause 23A: Contractor to indemnify for infringement of Patent or design

Contractor shall fully indemnify the Governor of Rajasthan against any action, claim or proceeding, relating to infringement or use of any patent or design, or any alleged patent or design, rights, and shall pay any royalties, which may be payable in respect of any article or part thereof, included in the contract, in the event of any claims made under or action brought against Government. In respect of any such matters, as aforesaid, the Contractor shall be, immediately, noticed thereof, and the Contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation, that may arise there from provided that the Contractor shall not be liable to indemnify the Governor of Rajasthan, if the infringement of the patent or design or any alleged patent or design, right is the direct result of an order passed by the Engineer-in-Charge in this behalf.

Clause 24: Imported Store articles to be obtained from Government

The contractor shall obtain from the stores of the Engineer-in-charge, all imported store articles which may be required for the work or any part thereof, or in making up articles required thereof, or in connection therewith, unless he has obtained permission, in writing, from the Engineer-in-charge, to obtain such stores and articles from else-where. The value of such stores and articles, as may be supplied to the Contractor by the Engineer-in-charge, will be debited to the Contractor, in his account, at the rates shown in the schedule attached to the contract, and if they are not entered in the schedule, they will be debited at cost price, which for the purposes of this contract, shall include the cost of carriage and all other expenses, whatsoever, which shall have been incurred in obtaining delivery of the same at the stores aforesaid plus storage charges.

Clause 25: Lump-sums in estimates

When the estimate, on which a tender is made includes lump sums, in respect of parts of the work, the Contractor shall be entitled to payment in respect of the item of work involved, or

the part of the work in question at the same rates, as are payable under the contract for such items or if the part of the work in question is not, in the opinion of the Engineer-in-charge, capable of measurement, the Engineer-in-charge may at his discretion pay the lump sum amount entered in the estimate and the certificate in writing of the Engineer-in-charge shall be final and conclusive with regard to any sum or sums payable to him under the provisions of this clause.

Clause 26: Action where no Specification

In case of any Class of work for which there is no such specification as is mentioned in the contract document referred in ITB Clause 4.1, such work shall be carried out in accordance with the detailed specification of the department and also in accordance with the instructions and requirement of the Engineer-in-charge.

Clause 27: Definition of work

The expression "works" or "work" where used in these conditions, shall, unless there be something either in subject or context, repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed, whether temporary or permanent, and whether original, altered, substituted or additional.

Clause 27A: Definition of Engineer-in-charge

The term "Engineer-in-charge" means the Divisional officer who shall supervise and be in-charge of the work and who shall sign the contract on behalf of the Governor.

Clause 28:

It cannot be guaranteed that the work will be started immediately after the tenders have been received. No claims for increase of rate will be entertained, if the orders for starting work are delayed.

Clause 29: Payments at reduced rates on account of items of work not accepted and not completed to be at the discretion of the Engineer-in-charge

The rates for several items of works, estimated to cost more than Rs. 1,000/-, agreed within, will be valid only when the item concerned is accepted as having been completed fully in accordance with the sanctioned specifications. In cases, where the items of work are not accepted, as so completed, the Engineer-in-charge may make payment on account of such items, at such reduced rates, as he may considers reasonable, in the preparation of final or on account bills, and his decision in the matter shall be final and binding.

Clause 29A: Payments at part rates

The rates for several items of works may be paid at part rates provisionally in running bills in proportion to the quantum of items executed at the discretion of Engineer-in- charge. In case of item rates, if the rate quoted for certain items are very high in comparison to the average/overall tendered premium, then the payment at running stages shall not be made

more than the average sanctioned premium. The deferred payment, will however be released after successful completion of the work.

Clause 30: Contractors Percentage:

The percentage referred to in the "Tender for works" will be deducted/ added from/ to the gross amount of the bill before deducting the value of any stock issued.

Clause 31: Contractor to adhere to labour laws/regulation

The Contractor shall adhere to the requirements of the Workmen's Compensation Act and Labour Legislation in force from time to time and be responsible for and shall pay any compensation to his workmen which would be payable for injuries under the Workmen's Compensation Act, here-in-after called the said Act. If such compensation is paid by the State as Principal employer under Sub Section (1) of section 12 of the said Act, on behalf of the Contractor, it shall be recoverable by the State from the Contractor under Sub Section (2) of the said section. Such compensation shall be recovered in the manner laid down in clause 1 of the Conditions of Contract.

Note: All contracts with Government shall require registration of workers under the building & other Construction Workers (Regulation of Employment & Conditions of Services) Act, 1996 and extension of benefit to such workers under the Act. Deduction of cess at source will be made as per provisions of the said Act, in force from time to time.

Clause 32: Withdrawal of work from the Contractor

If the Engineer-in-charge shall at any time and for any reasons, whatever, including inability to maintain prorate progress, think any portion of the work should not be executed or should be withdrawn from the Contractor, he may, by notice in writing to that effect, require the Contractor not to execute the portion of the work specified in the notice, or may withdraw from the Contractor the portion of work, so specified, and the Contractor shall not be entitled to any compensation, by reason of such portion of work having been withdrawn from him. The Engineer-in-charge may supplement the work by engaging another agency to execute such portion of the work at the cost of the original contractor, without prejudice to his rights under clause 2. He shall also be competent to levy compensation for delay in progress. The recovery of excess cost shall be made from next available running bill or any other claim and shall not be deferred.

Clause 33:

The Contract includes clearance, leveling and dressing of the site within a distance of 15 meters of the building on all sides except where the building adjoins another building.

Clause 34: Protect works

The Contractor shall arrange to protect, at his own cost, in an adequate manner, all cut stone work and other work, requiring protection and to maintain such protection, as long as work is in progress. He shall remove and replace this protection, as required by the Engineer-in-Charge, from time to time. Any damage to the work, so protected, no matter how it may be

caused, shall be made good by the Contractor free of cost. All templates, forms, moulds, centering, false works and models, which in the opinion of the Engineer-in-Charge, are necessary for the proper and workman like execution of the work, shall be provided by the Contractor free of cost.

Clause 35: Contractor liable for settlement of claims caused by his delays

If the progress of the work has fallen so much in arrears as to prevent other contractors on the work, from carrying out their part of the work within the stipulated time, he will be liable for the settlement of any claim, put in by any of these contractors for the expenses of keeping their labour unemployed, to the extent considered reasonable by the Engineer-in-Charge.

Clause 36A:

The liability, if any, on account of quarry fees, royalties, Octroi and any other taxes, cess and duties in respect of materials actually consumed on public work, shall be borne by the Contractor.

Clause 36B:

The cost of all water connections, necessary for the execution of work, and the cost of water consumed and hire charges of meters and the cost of electricity consumed in connection with the execution of work, shall be paid by the Contractor, except where otherwise specifically indicated.

Clause 36C: Payment of Sales Tax, and any other Taxes

Royalty or other tax on materials, issued in the process of fulfilling contract, payable to the Government under rules in force, will be paid by the Contractor himself.

Clause 36D:

In respect of goods and materials procured by the Contractor, for use in works under the contract, sales tax will be paid by the Contractor himself. But in respect of all such goods manufactured and supplied by the Contractor and works executed under the contract, the responsibility of payment of sales tax would be that of the Engineer-in- charge.

Clause 37: Refund of Security Deposit

The Security Deposit will be refunded after the expiry of the period, as prescribed below: -

In case of contracts relating to hiring of trucks and other T&P, transportation including loading, unloading of materials, the amount of Security Deposit is refundable along with the final bill.

Supplies of material: As per provisions of G.F.&A.R.

Ordinary repairs: 3 months after completion of the work provided the final bill has been paid.

Original works/special repair works: Security Deposit will be refunded six months after completion, or expiry of one full rainy season, or after expiry of defect liability period as defined in the special condition of agreement, whichever is later provided the final bill has been paid.

In case of PWD original works/special repairs works costing more than Rs. 10.00 Lacs, partial amount of Security Deposit will be refunded during the defect liability period @ 10%

of SD amount after lapse of one year of completion and thereafter 10% of original amount of SD at the end of each subsequent year. The remaining amount of SD be refunded after the expiry of Defect Liability period.

Clause 38: Fair Wage Clause

The Contractor shall pay not less than fair wages/minimum wages to laboures engaged by him on the work as revised from time to time by the Government, but the Government shall not be liable to pay anything extra for it except as stipulated in price escalation clause (clause 45) of the agreement.

Explanation: "Fair Wage" means minimum wages for time or piece work, fixed or revised, by the State Government under Minimum Wages Act, 1948.

The Contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wages to labourers indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work as if the labourers have been immediately or directly employed by him.

In respect of all labourers immediately or directly employed on the work, for the purpose of the Contractor's part of this agreement, the Contractor shall comply with or cause to be complied with the Public Works Department Contract's Labour Regulations made, or that may be made by the Government, from time to time, in regard to payment of wages, wages period, deductions from wages, recovery of wages not paid, and unauthorized deductions, maintenance of wages register, wage card, publication or scale of wages and other terms of employment, inspection and submission of periodical returns and other matters of a like nature.

The Engineer-in-charge shall have right to deduct from the money due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers, by reasons of non-fulfillment of the conditions of the contract, for the benefit of the worker or workers, non- payment of wages or of deductions made therefrom, which are not justified by the terms of the contract, or as a result of non-observance of the aforesaid regulations.

Vis-a-Vis the Government of Rajasthan, the Contractor shall be primarily liable for all payments to be made and for the observance of the regulations aforesaid, without prejudice to his right to claim indemnity from his sub- contractors.

The regulations, aforesaid, shall be deemed to be part of this contract and any breach, thereof, shall be deemed to be breach of the Contractor

Clause 39 A	
Requirement of technical representative(s) and recovery rate	

The bidder should propose a panel of expert(s) as under:

i. Project lead with a recognized degree in B Tech from a reputed institute and at least Ten (10) years of total professional experience

ii. At least one expert each having a Degree/ Diploma from a reputed institute in the fields of:

(a) Interior Designer with experience of minimum 07 years .

(b) Two Nos. Civil Engg with experience of minimum 05 years;

(c) One Electrical Engineer with experience of minimum 05 years.

(d) Quality control Engg. With relevant qualification and with experience of minimum 05 years.

(e) Safety Engg. With relevant qualification and with experience of minimum 03 years.

The bidder should enclose duly attested CVs of the above experts.

Clause 39 B:

The Contractor shall comply with the provisions of the Apprenticeship Act, 1961, and the Rules and Orders issued, thereunder, from time to time. If he fails to do so, his failure will be a breach of contract. The Contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

Clause 40: Safety code

The Contra0ctor shall follow the safety code (s) of the department and as specified in special conditions of contract.The contractor will take adequate precautions to avoid accidents, occupational illness with least disturbance to the environment, adjoining road users and traffic.

Clause 41: Near Relatives barred from tendering

The Contractor shall not be permitted to tender for works in Circle, in which his near relative is posted as Divisional Accountant or as an officer in any capacity between the grades of the Superintending Engineer and Assistant Engineer (both inclusive). He shall also intimate the names of persons, who are working with him in any capacity, or are subsequently employed by him and who are near relatives to any gazetted officer in the Organization/Department. Any breach of this condition by the Contractor would render him liable to be removed from the approved list of contractors of the Department. If such facts is noticed (a) before sanction of tender, his offer shall be declared invalid and earnest money shall be forfeited, (b) after sanction of the tender then the tender sanctioning authority may at his discretion forfeit his earnest money, security deposit and enlistment deposit and work/remaining work may allot to any registered contractor on the same rates as per rules.

Note: By the term "near relative" is meant wife, husband, parents, and grand-parents, children and grandchildren, brothers and sisters, uncles and cousins and their corresponding in-laws.

Clause 42: Retired Gazetted Officers barred for 2 years

No Engineer of Gazetted rank or other Gazetted officer, employed in Engineering or Administrative duties in an Engineering Department of the Government of Rajasthan, is allowed to work as a Contractor for a period of 2 years of his retirement from Government service without the previous permission of Government of Rajasthan. This contract is liable to be cancelled, if either the Contractor or any of his employee is found, at any time, to be such a person, who had not obtained the permission of Government, as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

Clause 43: Quality Control

The Government shall have right to exercise proper Quality Control measures. The Contractor shall provide all assistance to conduct such tests.

Clause 43 A:

The work (whether fully constructed or not) and all materials, machines, tools and plant, scaffolding, temporary buildings and other things connected therewith, shall be at the risk of the contractor until the work has been delivered to the Engineer-in- charge, and a certificate from him, to the effect, obtained.

Clause 44: Death of Contractor

Without prejudice to any of the rights or remedies under the contractor, if the Contractor dies, the legal heirs of the Contractor or the Chief Engineer or duly authorized Engineer shall have the option of terminating the contract without any compensation.

Clause 45: Price Variation Clause: Deleted

No Price variation will be paid in this EPC contract.

Clause 46: Force-Majeure

Neither party shall be liable to each other, for any loss or damage, occasioned by or arising out of acts of God such as unprecedented floods, volcanic eruptions, earthquake or other invasion of nature and other acts.

Clause 47: General Discrepancies and Errors

In case of percentage rate tenders, if there is any typographical or clerical error in the rates shown by Department in the "G" Schedule, the rates as given in the Basic Schedule of Rates of the Department for the area shall be taken as correct.

Clause 48: Post payment Audit

The JDA shall have right to cause an audit and technical examination of the works, and the final bills of the contractor, including all supporting vouchers, abstracts, etc., to be made within 2 years after payment of the final bill, and if, as a result of such audit and technical examination, any sum is found to have been over paid in respect of any work done by the Contractor under the contract, or any work claimed by him to have been done by him under the Contract and found not to have been executed or executed below specifications, the Contractor shall be liable to refund the amount of over payment, and it shall be lawful for Department to recover the same from him in the manner prescribed in Clause 50 or in any other manner legally permissible, and if it is found that the Contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under- payment shall be duly paid by the Government to the Contractor.

Clause 48B: Check Measurements

The department reserves to itself, the right to prescribe a scale of check measurement of work, in general, or specific scale for specific works, or by other special orders (about which the decision of the department shall be final). Checking of measurement by superior officer shall supersede measurements by the subordinate officer, and the former will become the basis of the payment. Any over/excess payments detected, as a result of such check measurement or otherwise at any stage up to the date of completion and the defect removal period specified elsewhere in this contract, shall be recoverable from the Contractor, as any other dues payable to the Government.

Clause 49: Dismantled materials

The Contractor, in course of the work, should understand that all materials e.g. stone, bricks, steel and other materials obtainable in the work by dismantling etc. will be considered as the property of the Government and will be disposed off to the best advantage of the Government, as per directions, of the Engineer-in-charge.

Clause 50: Recovery from Contractors

Whenever any claim against the Contractor for the payment of a sum of money arises out of or under the contract, the Department shall be entitled to recover such sum by appropriating, in part or whole of the Security Deposit, Security Deposit at the time of enlistment of the Contractor. In the event of the security being insufficient, or if no security has been taken, then the balance or the total sum recoverable, as the case may be, shall be deducted from any sum, then due or which at any time, thereafter, may become due to the Contractor, under this or any other contract with the Governor of Rajasthan. Should this sum be not sufficient to cover the full amount recoverable, the Contractor shall pay to the Department on demand the balance remaining dues.The department shall, further, have the right to effect such recoveries under Public Demand Recovery Act.

Clause 51: Jurisdiction of Court

In the event of any dispute arising between the parties hereto, in respect of any of the matters comprised in this agreement, the same shall be settled by a competent Court having jurisdiction over the place, where agreement is executed and by no other court, after completion of proceedings under Clause 23 of this Contract.

SECTIONVB
SPECIAL CONDITION OF CONTRACT

SPECIAL CONDITIONS

SCHEDULE 'H'

1. Use of Bitumen mixture Tar mechanical lime grinder, cement concrete mixer & vibrator is essential for the work. Which shall have to be arranged by the contractor at his own level/cost?
2. The contractor shall follow the contractor labour regulation and abolition Act 1970 & Rule 1971.
3. The JDA shall have right to cause on audit and technical examination of the work and the final bills of the contractor including all supporting vouchers, abstract etc. to be made within two years after payment of the final bills and if as a result such audit any amount is found to have been over paid/excess in respect of any work done by the contractor under the contract or any work claimed by him to have been done under this contract and found not to have been executed the contractor shall be liable to refund such amount and it shall be lawful ;for the JDA to recover such sum from him in ;the manner prescribed in special condition no. 8 or any other manner legally permissible and if it is found that the contractor was paid less then that was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be paid by the JDA to the contractor.
4. The contractor shall not work after the sunset and before sunrise without specific permission of the EIC.
5. Whenever any claim against the contractor for the payment of a sum of money arises out or under the contracts, the JDA shall be entered to recover the sum by appropriating in part or whole of the security deposit of the contractor. In the event of the security being insufficient or if no security has been taken from the contractor then the balance of the total sum recoverable as the case may shall be deducted from any sum then due or which a any time there contract with the JDA should this sum be sufficient to recover the full amount recoverable, the contractor shall pay to JDA on demand the balance remaining due. The JDA shall further have the right to effect such recoveries under P.D.R. Act.
6. The rate quoted by the contractor shall remain valid for a period of 4(four) months from the date of submission of bids.
7. By submission of this tender the contractor agree to abide with all printed conditions provided in the PWD manual from 64 (Chapter 3-para 36) and subsequent modification.
8. No conditions are to be added by the contractor and conditional tender is liable to be rejected.
9. All transaction in the execution of this work and this tender will be liable to sale-tax vide section 2(B) read with sub clause (4) Sale-tax Rule, 1954.
10. If any tenderer withdraws his tender prior to expiry of said validity period given at S.No. 6 or mutually extended prior or makes modifications in the rates, terms and conditions of the tender within the said period which are not acceptable to the department or fails to commence the work in the specified period, fails to execute the agreement the department shall without prejudice to any, other right or remedy, be at liberty to forfeit the amount of Bid Security (EMD) given in any form absolutely. If any contractor, who having submitted a tender does not execute the agreement or start the work or dose not complete the work and

the work has to be put to retendering, he shall stand debarred for six months from participating of tendering in JDA in addition to forfeiture of Bid Security (EMD) / Security Deposit and other action under agreement.

11. The contractor shall arrange his own machinery required for the work as mentioned in the section-III of the tender document.
12. The contractor shall arrange his own storage tanks upto 10 Tones capacity for storing bulk bitumen wherever supplied by the department.
13. Rules regarding enlistment of contractors provide that work ;upto five times limit for which they are qualified for tendering can be allotted to them Therefore, before tender the contractors will keep this in mind, and submit the details of work. Tenders with incomplete or incorrect information are liable to be rejected.
14. Any material not conforming to the specifications collected at site shall have to be removed by the contractor within a period of 3 days of the instructions, issued by the Engineer-In-charge in writing. Failing which, such material shall be removed by the Engineer-In-charge at risk and the contractor after expiry of 3 days period.
15. The material collected at site and paid provisionally shall remain under the watch and ward of the contractor till it is consumed, fully on the work.
16. The rates provided in tender documents are inclusive of all Taxes royalty.
17. For paver work at least 3 road rollers shall be simultaneously deployed.
18. Bitumen for tack coat or any other purposes, shall be applied only be a bitumen sprayer of a mechanical pressure.
19. No extra lead of earth/material shall be paid over and above as specified in 'G' schedule. Source/borrow pit area for earth shall have to be arranged by the Contractor at his own cost.
20. Undersigned has full right to reject any or all tenders without given any reasons.
21. Mortar of Masonry work and lean concrete will be permitted mixer with hopper.
22. As per Supreme Court decision "All contracts with Governments shall require registration of workers under the building and other construction workers (Regulation of Employment and Conditions of Service) Act, 1996 and extension of benefits to such workers under the act."
23. Special Conditions of Contract regarding Defect Liability Period (DLP) for Roads works costing Rs. 25.00 lacs and more shall be applicable.
24. The tender are required to submit copy of their enlistment as contractor.
25. Conditions of RPWA-100 will be mandatory & acceptable to the contractor.
26. Any tender received with unattested cutting/overwriting in rates shall be rejected and such bidder will be debarred from tendering for three months in JDA.
27. All the provisions of THE RAJASTHAN TRANSPARENCY IN PUBLIC PROCUREMENT ACT, 2012 and Rules, 2013 will be applicable. If there is any contradictions in existing special conditions and provisions of THE RAJASTHAN TRANSPARENCY IN PUBLIC PROCUREMENT ACT, 2012 and RULES, 2013, provisions of THE RAJASTHAN TRANSPARENCY IN PUBLIC PROCUREMENT ACT, 2012 and RULES 2013 shall be applicable.
28. The Contractor will have to install display boards at site of work as directed by Engineer in charge. Failing which penalty of Rs. 5000.00 per day will be imposed.
29. As per order no D-352, dated 29.08.2018, the last date of bid submission is considered a key date for deciding the base indexes.

30. निविदा में निर्धारित राशि से अधिक/कम Bid Security राशि बिडर द्वारा Online नही जमा कराई जावें, सिस्टम द्वारा भी कम/अधिक राशि बिड स्वीकार नही की जावेंगी।
31. As per order no प–1(24)नविवि/1/2020 लूज जयपुर, दिनांक 20.09.2021 issued by office UDH , Govt of Rajasthan (order enclosed), if any bidder quotes a rate below than the estimated rates i.e. rates below than át par' then the bidder has to deposit the difference amount i.e. difference amount of the rates as per át par' and quoted ''below'' as "Work Performance Guarantee". This amount has to be deposited before the commencement of work and will be refunded after successful completion of DLP period. Lowest bidder will be issued LOA (Letter of Acceptance) and within 14 days period he has to deposit difference amount in the form of B.G./FDR/NSC. The validity of these shall be for a period upto completion of DLP and shall have to be extended time to time up to actual completion of work as per requirement. In case of non-deposition of the same in specified period, the Bid Security will be forfeited. In case work in not completed satisfactorily, the "Work Performance Guarantee" will be forfeited and other action will be taken as per Contract Agreement. The difference amount is to be calculated on total cost of the bid i.e Rs. 18.14 crore.

Signature of Contractor
with full address & Mobile No.

Executive Engineer (HQ)
JDA, Jaipur.

RTTP Annexure A: Compliance with the Code of Integrity and No Conflict of Interest

(a) Any person participating in a procurement process shall-
(b) Not offer any bribe, reward or gift or any material benefit either directly or indirectly in exchange for an unfair advantage in procurement process or to otherwise influence the procurement process;
(c) Not misrepresent or omit that misleads or attempts to mislead so as to obtain a financial or other benefit or avoid an obligation;
(d) Not indulge in any collusion, Bid rigging or anticompetitive behavior to impair the transparency, fairness and progress of the procurement process;
(e) Not misuse any information shared between the procuring entity and the bidders with an intent to gain unfair advantage in the procurement process;
(f) Not indulge in any coercion including impairing or harming or threatening to do the same, directly or indirectly, to any party or to its property to influence the procurement process;
(g) Not obstruct any investigation or audit of a procurement process;
(h) Disclose conflict of interest, if any; and
(i) Disclose any previous transgressions with any entity in India or any other country during the last three years or any debarment by any other procuring entity.

Conflict of interest:-

The Bidder participating in a bidding process must no have a Conflict of Interest.
A Conflict of interest is considered to be a 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.
(i) A bidder may be considered to be in conflict of interest with one or more parties in the bidding process if, including but not limited to:

(a) Have controlling partners/shareholders in common; or
(b) Receive or have received any direct or indirect subsidy from any of them; or
(c) Have the same legal representative for purposes of the bid; or
(d) have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another bidder, or influence the decisions of the procuring Entity regarding the bidding process; or
(e) The bidder participates in more than one bid in a bidding process. Participation by a bidder in more than one bid will result in the disqualification of all bids in which the bidder is involved. However, this does not limit the inclusion of the same subcontractor, not otherwise participating as a bidder, in more than one bid; or
(f) the bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the goods, works or services that are the subject of the Bid; or
(g) Bidder or any of its affiliates has been hired (or proposed to be hired) by the procuring entity as engineer-in-charge/consultant for the contract.

Signature of Bidder
with full address & Mobile No.

RTTP Annexure B: Declaration by the Bidder regarding Qualifications

Declaration by the Bidder

In relation to my/our Bid submitted to .....for procurement of .....in response to their Notice inviting Bids No.....Dated.....I/we .....hereby declare under Section 7 of Rajasthan Transparency in Public Procurement Act, 2012 that :

1. I/we possess the necessary professional, technical, financial and managerial resources and competence required by the Bidding Document issued by the Procuring Entry;

2. I/we have fulfilled my/our obligation to pay such of the taxes payble to the union and the state government or any local authority as specified in the Bidding Document.

3. I/we are not insolvent, in receivership, bankrupt or being wound up, not have my/our affairs administered by a court or a judicial officer, not have my/our business activities suspended and not the subject of legal proceedings for any of the foregoing reasons;

4. I/we do not have, and our directors and officers not have, been convicted of any criminal offence related to my/our professional conduct or the making of false statements or misrepresentations as to my/our qualifications to enter into a procurement contract within a period of three years preceding the commencement of this procurement process, or not have been otherwise disqualified pursuant to debarment proceedings;

5. I/we do not have a conflict of interest as specified in the Act, Rules and the Bidding Document, which materially affects fair competition;

Date : Signature of bidder

Place : Name :

Designation :

Address :

RTTP Annexure C: Grievance Redressal during Procurement Process

The designation and address of the First Appellate Authority is Executive Committee (EC), JDA,
The designation and address of the Second Appellate Authority is **A.C.S./P.S., UDH, Govt. of Rajasthan**.

(1) Filing an appeal:-

a) if any bidder or prospective bidder is aggrieved that any decision, action or omission of the procuring entity is in contravention to the provisions of the Act or the rules or the guidelines issued there under, he may file an appeal to First Appellate authority, as specified in the Bidding document within a period of ten days from the date of such decision or action, omission, as the case may be, clearly giving the specific ground or grounds on which he feels aggrieved:

b) Provided that after the declaration of a bidder as successful the appeal may be filed only by a bidder who has participated in procurement proceedings:

c) Provided further that in case a procuring entity evaluates the technical bids before the opening of the financial bids, an appeal related to the matter of financial bids may be filed only by a bidder whose technical bid is found to be acceptable.

(2) The officer to whom an appeal is filed under Para (1) shall deal with the appeal as expeditiously as possible and shall endeavor to dispose it of within thirty days from the date of the appeal.

(3) If the officer designated under Para (1) fails to dispose of the appeal filed within the period specified in Para (2), or if the bidder or prospective bidder or the procuring entity is aggrieved by the order passed by the first appellate authority, the bidder or prospective bidder or the procuring entity, as the case may be, may file a second appeal to second appellate authority specified in the bidding document in this behalf within fifteen days from the expiry of the period specified in Para (2) or of the date of receipt of the order passed by the first appellate authority, as the case may be.

(2) Appeals not to lie in certain cases:-

No appeal shall lie against any decision of the procuring entity relating to the following matters, namely:-

(a) Determination of need of procurement
(b) Provisions limiting participation of bidders in the bid process
(c) The decision of whether or not to enter into negotiations
(d) Cancellation of a procurement process
(e) Applicability of the provisions of confidentiality

(3) From of Appeals:-

a) An appeal under Para (1) or (3) above shall be in the annexed form along with as many copies as there are respondents in the appeal.

b) Every appeal shall be accompanied by an order appealed against, if any, affidavit verifying the facts stated in the appeal and proof of payment of fee,

c) Every appeal may be presented to first appellate authority or second appellate authority, as the case may be, in person or though registered post or authorized representative.

(4) Fee for filing Appeal:-

(a) Fee for first appeal shall be rupees two thousand five hundred and for second appeal shall be rupees ten thousand, which shall be non-refundable.

(b) The fee shall be paid in the form of bank demand draft or banker's cheque of a scheduled bank in India payable in the name of appellate authority concerned.

(5) Procedure for disposal of Appeal:-

(a) The first appellate authority or second appellate authority as the case may be, upon filing of appeal, shall issue notice accompanied by copy of appeal, affidavit and documents, if any, to the respondents and fix date of hearing

(b) On the date fixed for hearing, the first appellate authority of second appellate authority, as the case may be shall-

(i) Hear all the parties to appeal present before him; and

(ii) Peruse or inspect documents, relevant records or copies thereof relating to the matter.

(c) After hearing the parties, perusal or inspection of documents and relevant records or copies thereof relating to the matter, the appellate authority concerned shall pass an order in writing and provide the copy of order to the parties to appeal free of cost.

(d) The order passed under sub-clause (c) above shall also be placed on the state public procurement portal.

Date : Signature of bidder

Place : Name :

Designation :

Address :

FORM No. 1
[see rule 83]
Memorandum of Appeal under the Rajasthan Transparency in Public procurement Act, 2012

Appeal No……..of ……Before the……..……(First/Second Appellate authority)

1- Particulars of appellant :
(i) Name of the appellant :
(ii) Official address, if any:
(iii) Residential address :

2- Name and address of the respondent(s):
(i)
(ii)
(iii)

3- Number and date of the order appealed against and name and designation of the office/authority who passed the order (enclose copy), or a statement of a decision, action or omission of the procuring Entity in contravention to the provisions of the Act by which the appellant is aggrieved:

4- If the Appellant propose to be represented by a representative the name and postal address of the representative:

5- Number of affidavits and documents enclosed with the appeal:

6- Grounds of appeal : .....
(Supported by an affidavit)

7- Prayer : .....

Place :.....

Date : .....

Appellant's Signature

RTPP Annexure D: Additional Conditions of Contract

1. Correction of arithmetical errors

Provided that a financial bid is substantially responsive, the procuring entity will correct arithmetical errors during evaluation of financial Bids on the following basis:

i. 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 procuring entity 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;

ii. (ii) 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; and

iii. (iii) 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 (i) and (ii) above.

If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its bid shall be disqualified and its bid security shall be forfeited or its bid securing declaration shall be executed.

2. Procuring Entity's Right to Vary quantities.

(i) At the time of award of contract, the quantity of goods, works or services originally specified in the bidding documents may be increased or decreased, by a specified percentage, but such increase or decrease shall not exceed twenty percent, of the quantity specified in the bidding documents. It shall be without any change in the unit prices or other terms and conditions of the bid and the conditions of contract.

(ii) If the Procuring entity does not procure any subject matter of procurement or procures less than the quantity specified in the biding document due to change circumstances, the bidder shall not be entitled to any claim or compensation except otherwise provide in the conditions of contract.

(iii) In case of procurement of goods or services, additional quantity may be procured by placing a repeat order on the rates and conditions of the original order. However, the additional quantity shall not be more than 25% of the value of goods of the original contract and shall be within one month from the date of expiry of last supply. It the supplier fails to do so, the procuring entity shall be free to arrange for the balance supply by limited bidding or otherwise and the extra cost incurred shall be recovered from the supplier.

3. Dividing quantities among more than one bidder at the time of award (In case of procurement of Goods):-

As a general rule all the quantities of the subject matter of procurement shall be procured from the Bidder, whose Bid accepted. However, when it is considered that the quantity of the subject matter of procurement to be procured is very large and it may not be in the capacity of the Bidder, whose Bid is accepted, to deliver the entire quantity or when it is considered that the subject matter of procurement to be procured is of critical and vital nature, then in such cases, the quantity may be divided between the Bidder, whose Bid is accepted and the second lowest Bidder or even more Bidder in that order, in a fair, transparent and equitable manner at the rates of the Bidder, whose Bid is accepted.

Special Conditions of Contract regarding Defect Liability Period (DLP)
Table-I

S.No.	Type of work	DLP Period
1	Building work	
	(i) Work pertaining to Interior works, Fixed and movable furniture ,sanitary works electrical works, Joinery works and painting works.	5 Years
2	HVAC, Air Condition in Force Ventilation,Fire Fighting, Generator etc.	5 Years

DLP for all the components of the work under this project shall be Five years.

2. General

2.1 Inspection of works during Defect Liability Period

2.1.1 The contracting agency shall undertake joint detailed inspection along with committee as approved., at once in three months in case of all works. The committee can reduce this frequency in case of emergency. The Contracting agency shall forward to the Engineer-in-charge the record of inspection and rectification immediately after the joint inspection. The Contracting agency shall pay particulars attention on those sections, which are referred as likely to be damaged.

2.1.2 One register has to be maintained by every site engineers for recording the inspection details of works in his jurisdiction under defect liability period.

2.2 Conditions regarding Security Deposit

2.2.1Security for DLP-

The contracting agency shall have to furnish security deposit (SD)/Performance Security in the form of Bank Guarantee in favor of Secretary JDA, Jaipur valid from the actual date of completion, which shall be assigned by the Engineer-in-charge.

2.2.2 Refund of SD (Performance Guaranty)–

The SD shall be refunded after expiry of defect liability period after report of concerned engineering of satisfacory performance during the defect liability period as

S.No.	Released SD / DLP period	5th year
1	At the end of 1 year	10 %
2	At the end of 2 Years	10 %
3	At the end of 3 Years	10 %
4	At the end of 4 Years	20 %
5	At the end of DLP(5 Years)	50 %

Various conditions for managing DLP are as under:-

(i) During DLP period if contractor fails to repair any work even after issue of 7 days written notice, same work shall be got executed by respective Executive Engineer at the contractor's risk and cost and the double of actual expenditure shall be recovered from his performance security/security deposit. This process shall be applicable throughout the DLP period. In case of failure of any obligation under part of contractor during DLP should be debarred and blacklisted from JDA for three years as per RTPP Rule 2012 and 2013 where he defaults twice in a single agreement or in two different works.

(ii) Quarterly inspection as per rules shall be carried out and DLP registers shall be maintained by respective Executive Engineers to monitor the DLP repairs.

(iii) Special and regular inspection shall also be carried out as per order no. JDA/Ex.En& TA to DE-I/ 2014-15/D-223 dated 12.03.2015 and order no. SE (PMGSY) CIRCULAR 2006/D-115 dated 04.05.2006 point no. 3

(iv) In case JDA feels to take up work on any existing DLP due to any reason, following procedure should be adopted.

(v) At the time of withdrawal total liability of repairs as per DLP conditions to be carried out and contractor shall be asked to complete the same. After completion of assessed repairs DLP period shall be released after deduction amt as per table below.

% recovery on withdrawal of DLP on work order amt. / **DLP period**	**1 Year**	**2 Year**	**3 Year**	**4 Year**	**5 Year**
5 Years	9.00	7.88	6.45	4.62	2.47

Note :- Calculation is to be done on quarterly basis.

(a) In case Contractor fails to carry out these repairs, same shall be carried out at his risk and cost. If the total amt. of such repairs works out to be more than total retained amt. of SD, same shall be recovered from other works and as per PDR rules. The amount as per Table-III is also to be deducted in addition to this amount.

(b) Based upon type of work, DLP conditions for works to be carried out during DLP period with their frequency of respective type of work shall be prepared by respective SE's after approval of these periods.

2.2.3 Force Majeure

The defect arises due to earthquake, cyclone, and natural calamities shall not be the responsibly of contracting agency.

Signature of Contractor

With Full Address

Executive Engineer (HQ)

JDA, Jaipur.

The following Particular Conditions of Contract shall complement, amend, and supplement the GCC. Whenever there is a conflict, the provisions herein shall prevail over those in the GCC

Definitions

1.The Intended Completion Date will be 18 Months from Start Date followed by DLP .

The **Start Date** is the date as specified in the work order. This is the date when the Contractor can commence work on the Contract, but does not necessarily coincide with Possession Date of all the locations of Site.

2. Interpretation

Sectional Completion will be not allowed.

3. Language and Law

The law which shall govern the conduct of the Contract and according to which the Contract shall beconstrued is that in force in the State of Rajasthan, India. The language of the contract shall be in English.

4.Communications

Any notification under this Contract shall be served on the party concerned when received by telex, hand delivery, courier delivery, or registered letter at the addresses listed in the Contract Data Any notification under this Contract shall be served at the addresses provided below:

Address of the Contractor:

Name: _____

Address: _____

_____

Address:

Executive Engineer (HQ)
Jaipur Development Authority

Room No143, Main Building
Ram Kishor Vyas Bhawan, Indira Circle,
Jawahar Lal Nehru Marg, Jaipur-302004

6. Insurance

The minimum amount of Third-Party Liability insurance cover shall be *Rs 10,00,000 (Rupees ten Lakhs only)* per occurrence or event, with the number of occurrences not less than four. The Contractor shall promptly notify the Engineer of each claim made under the Third-Party Liability coverage, and shall renew the Third-Party Insurance after each such occurrence in order to maintain the number of covered occurrences at not less than four.

The minimum coverage against damage to the Works and materials during construction shall be *Rs. 5,00,000 (Rupees Five Lakhs only).*

7. Possession of Site

The employer will give possession of the sites as elaborated in the Notice to Proceed on the Date of Start as mentioned in NTP. The contractor will not be entitled to any delay or compensation event unless his work as per the agreed "Schedule of Work" is actually held up because of delay in the Employer's hand over of the site to the contractor. Refer Section V, Work Requirements for further details.

8. The work program shall be given in Inception Report submitted by the Selected Bidder and the same shall be final and binding, once approved by the Engineer. The Contractor shall submit the detailed method statement defining Contractor's methodology for implementation backed with his proposal for equipment planning & deployment duly supported with broad output calculation. The Drawings for any particular activity shall be issued to the contractor at least 30 days in advance of the schedule date of the start of the activity as per the approved program.

9. The Contractor shall provide an updated Work Program by the last day of each Month, which shall clearly demonstrate the actual progress achieved on each activity, the effect of the progress achieved on the timing of the remaining work, and the proposed changes in activities that will enable the Contractor to complete the Works within the Intended Completion Date. In case the Contractor fails to submit an updated Work Program within this time limit, the Engineer will be entitled to withhold an amount of Rs. 1,00,000/- (Rupees One lakh only) or 1% of the Contract Value (Whichever is more) from the next payment certificate, and continue to withhold this amount until the next payment after the date on which the overdue program has been submitted.

10.1 If in the opinion of the Engineer, the work on site is not progressing satisfactorily in accordancewiththe mutually agreed "Work Program" and the delay is likely to affect the overall completion of the work within the intended date of completion, he may by a written notice to the Contractor ask him to expedite the works within 15 days suitably to make for deficiencies.

10.2 If the contractor fails to take appropriate action in time in pursuance of 10.1, the Engineer may byanother notice informs him the components of work that will be carried out by him through another agency in parallel to the other activities being carried out by the contractor at his cost with a view of expediting the works and reducing delays. The value of the work so carried out will be credited to the contractors account, but he will not be responsible for the quality of the said work. The Engineer will recover the cost spent plus 5% for supervision charges from the next bill or

If the contractor fails to take appropriate action in time in pursuance of 10.1, the Engineer may withhold 25% amount of the delayed part of the work from the next running bills, till the contractor achieves the progress as per the agreed Work Plan.

If authority still feels the slow progress of the project then authority is free to make payments to the eligible vendors of materials and labors and get the work executed without consent of the contractor. However the contractor will be responsible for the whole project.

10.3 In addition to the Updated Program, Monthly updated progress reports shall be prepared by the Contractor and submitted to the Engineer in six copies in the first week of every calendar month. Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works. Each report shall include:

(a) Photographs and detailed descriptions of progress.

(b) charts showing the status of Construction Documents, purchase orders, manufacture and construction;

(c) records of personnel and Contractor's Equipment on Site;

(d) copies of quality assurance documents, test results and certificates of Materials;

(e) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and

Comparisons of actual and planned progress, with details of any aspects which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome such aspects.

11. Identifying Defects:

Unless otherwise indicated elsewhere in the contract, the Quality Assurance and Quality Control (QA/QC) document, shall be followed.

12. Correction of Defects:

(i) The Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins from the physical completion date specified in the completion certificate/ taking over certificate. The Defects Liability Period may be extended for as long as Defects remain to be corrected. The **Defect Liability Period** is 1 year from the date of completion mentioned in the certificate of Completion pursuant to the provisions of Clause 48.

(ii) The Engineer shall certify that all Defects have been corrected. If the Employer considers that

Correction of a Defect is not essential; he can request the Contractor to submit a quotation for the corresponding reduction in the Works Contract Price. If the Employer accepts the quotation, the corresponding change in the Contract Price is a Variation. The Defects Correction Period is 14 (fourteen) Days from the date of receipt by the Contractor of the Employer’s notice to correct any Defects in the Works.

(iii) If the Contractor has not corrected a Defect within the time specified in the Engineer’s notice, the Engineer may have the defect corrected by other contractor(s) and recover the cost paid for the same plus 5% for supervision charges from any amount due to the contractor.

13. Contract Price

This is a Lump Sum contract on EPC basis.

The Contract Price includes all duties, taxes, royalty, and fees that may be levied in the accordance with the laws and regulations in force as on the Base Date on the Contactor’s equipment, Plant, Materials and supplies to be acquired for the purpose of this Agreement and

on the services to be performed under this Agreement. Nothing in this Agreement shall relieve the Contractor from its responsibility to pay any tax including any tax that may be levied in India on profits made by it in respect of this Agreement.

14. Payments

14.1 The Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs, unless otherwise provided for in this Agreement.

14.2 Unless otherwise stated in this Agreement, the Contract Price covers all the Contractor's obligations for the Works under this Agreement and all things necessary for the Construction, and the remedying of any Defects in the Project.

14.3 All payments under this Agreement shall be made in Indian Rupees.

14.4**No price escalation will be paid under this EPC contract.**

14.6 The Authority shall make payments to the Contractor as certified by the Engineer on completion of a stage, as specified, and valued in accordance with the proportion of the Contract Price assigned to each item and its stage. Contractor will be paid as per the Payment Schedule prescribed below:

14.7 The bidder will complete the whole project in all respects including all basic facilities at the stage of running this project.

SCHEDULE OF STAGE PAYMENT

(A) FOR CIVIL WORK

S.N.	Stages of Payment		Breakup of % of Interior and Furnishing Works Value in Contract		Detailed Breakup of %
1.	**Development of Interior works in Gandhi Darshan Museum Building**				
1.1	**All Finishing work**		**8.00%**		
	Completion of Finishing work like AAC Block work,brick/ stone masonry work, rammed earth walls or partition walls, plaster, pointing etc in the building				
	A.	Completion of AAC Block/brick masonry/stone masonry work		3.00%	3.00%
	a.	Basement			1.00%
	b.	Lower ground floor			1.00%
	c.	Upper ground floor			0.75%
	d.	First floor			0.25%
	B.	Completion of rammed earth walls		2.00%	2.00%
	C.	Completion of plaster and pointing		3.00%	3.00%
1.2	**False Ceiling work**		**0.60%**		
1.2.1	**Completion of All type of False ceiling work Block wise**				
	A.	**Basement**		0.15%	
	a.	Toilets			0.15 %
	B.	**Lower Ground Floor**		0.30%	
	a.	Restaurant			0.15%
	b.	Toilets			0.15%
	C.	**Upper Ground Floor**		0.15%	
	c.	Toilets			0.15%
1.3	**Flooring Work**		**15.0%**		
1.3.1	**Completion of All type of Flooring, Skirting, Dado, Window sills, Jambs Work Block wise Amenities like :**				
	A.	**Basement**		4.0%	
	a.	Exhibit Area			3.0%
	b.	Curation room, service rooms etc.			0.5%
	c.	Toilets, courts			0.5%
	B.	**Lower Ground Floor**		4.0%	

S.N.	Stages of Payment		Breakup of % of Interior and Furnishing Works Value in Contract		Detailed Breakup of %
	a.	Exhibit Area			2.50%
	b.	Curation room, service rooms			0.50%
	c.	Restaurant & kitchen area			0.50%
	d.	Toilets and court			0.50%
	C.	**Upper Ground Floor**		4.00%	
	a.	Admin block (+0.90m lvl)			0.25%
	b.	Block-A (+2.40m lvl): lobby & kiosk			0.25%
	c.	Block-B (+3.00m lvl):lobby, varandah, rooms, hall			0.25%
	d.	Block-C (+3.00m lvl): lobby & halls			0.25%
	e.	Block-D (+4.00m lvl): halls, rooms, lobby, corridors			1.50%
	f.	Prayer hall			0.25%
	g.	Court area			1.00%
	h.	Toilets and service rooms			0.25%
	D.	**First Floor**		1.0%	
	E.	**In common & remaining areas like staircase, lift, ramps & corridor etc**		2.0%	1.0%
1.4	**Completion of all types of plumbing and sanitary Work**		**2.40%**	2.40%	
1.5	**Completion of All type of Doors, Windows in all respect**		**8.00%**		
	A.	**Basement**		1.50%	
	B.	**Lower Ground Floor**		1.50%	
	C.	**Upper Ground Floor**		4.00%	
	D	**Remaining areas**		1.00%	
1.6	**Completion of railing & entrance gate work**		**2.00%**	2.00%	
1.7	**Completion of Plaster of Paris and paint Work**		**1.00%**	1.00%	
1.8	**Completion of water proofing and plinth protection works in all respect.**		**2.00%**	2.00%	
2	**Furniture Works**		**5.00%**		
2.1	**furniture like Reception Counters and other counters, cupboards, shelves, chairs etc and roller blinds**			5.00%	
	A.	On Supply of furniture			2.50%
	B.	Installation of furniture in all respect			2.00%
	C.	Curtains/Roller blinds			0.50%
3.0	Restoration of the site &handing over the site		**6.00%**		
	A.	On completion of all civil work in Basement Block			1.50%

S.N.	Stages of Payment		Breakup of % of Interior and Furnishing Works Value in Contract		Detailed Breakup of %
	B.	On completion of all civil work in lower ground Block			1.50%
	C.	On completion of all civil work in upper ground Block			2.00%
	D.	On completion of all civil work in first floor block			1.00%

(B) FOR ELECTRICAL WORKS

S.N.	Stages of Payment		Breakup of % of Electrification Works Value in Contract		Detailed Breakup of %
1.	**Supply, Installation, Testing & Commissioning of Interior Electrification & Mechanical works**				
1.1	**Completion of HVAC work**		**30.0%**		
1.1.1	**Completion of All type of HVAC work Block wise**				
	A.	**Completion of Basement**		8.0%	
	a.	Exhibit Area			6.0%
	b.	Other area			2.0%
	B.	**Completion of lower ground floor**		8.0%	
	a.	Exhibit Area			6.0%
	b.	Other area			2.0%
	C.	**Completion of upper ground floor :**		11.0%	
	a.	Admin block (+0.90m lvl)			1.00%
	b.	Block-A (+2.40m lvl)			2.00%
	c.	Block-B & C (+3.00m lvl)			3.00%
	d.	Block-D (+4.00m lvl)			4.00%
	e.	Prayer hall			1.00%
	D.	**In remaining areas**		3.0%	3.0%
1.2	**Completion of Fire Fighting Work Floor Wise**		**3.0%**		
	a.	Completion in Basement			1.0%
	b.	Completion in lower ground floor			1.0%
	c.	Completion in upper ground floor			1.0%
1.3	**Completion of Internal Electric wiring & fixtures Work**		**9.0%**		
	A.	**Completion in Basement**		1.50%	
	B.	**Completion in lower ground floor**		1.50%	
	C.	**Completion of upper ground floor :**		5.00%	
	D.	**Remaining area**		1.00%	
1.4	**Completion of elevator work**		**3.00%**	3.00%	
1.4	**Completion of Force Ventilation work**		**2.0%**		

S.N.	Stages of Payment	Breakup of % of Electrification Works Value in Contract		Detailed Breakup of %
	A. Completion of Basement			2.00%
1.10	On completion of complete electrical & mechanical works in all respect	**3.0%**		3.0%

Note :-

1. Any variations in drawings and designs for the betterment of the project made by consultant with variations upto 2% of contract value no additional cost shall be payable. The assessment of additional work shall be based on prevailing BSRs or market rates.

2. In case of execution of any substitute item, if required to be executed for the betterment of project,the difference payment of the same shall be made with mutual agreement after proper assessment of rates based on BSR's or Market Rates.

15. Advance Payment

Advances to contractors are as a rule prohibited, and every endeavor should be made to maintain a system under which no payments are made except for work actually done.

Exceptions are, however, permitted in the following cases:

(a) Cases in which a contractor, whose contract is for finished work, requires an advance on the security of the materials brought to site. Divisional officers may, in such cases, make advances upto an amount not exceeding 75 percent of the current value of the materials (as assessed by themselves according to their character), provided that they are of an imperishable nature and that a formal indenture is drawn up in Form 31 with the contractor under which the Government secure a lien on the materials and are safe-guarded against losses due to the contractor postponing the execution of the work or the shortage or misuse of the materials and against the expense entailed for their proper watch and safe custody. Payment of such advances should be made only on the certificate of an officer, not below the rank of Sub-Divisional officer, that the quantities of materials, upon which the advances are made have actually been brought to site, that the contractor has not previously received any advance on that security and that the materials are all required by the contractor for use on items of work for which rates for finished work have been agreed upon. The officer granting such a certificate will be held personally responsible for any overpayment which may

occur in consequence. Recoveries of advances, so made, should not be postponeduntil the whole of the work entrusted to the contractor is complete. They should be made from this bills for work done as the materials are used, the necessary deductions being made, whenever the items of work, in which they are used are billed for.

Note-1 Divisional Officers are responsible that:-

i. When secured advances have been made for materials, recoveries are made regularly from the very first payment made for those items of actual work in which such materials have been used.
ii. No secured advances are made for any materials, unless they are to be used within three months at the most.
iii. Materials are actually measured in details before making secured advances on them and their value is based on the actual rates for the purpose of determining the percentage at which secured advances on materials should be made.

Note-2 Imperishable materials include Bricks, Rolled Steel Joists, etc. while articles such as Lime, Sand, kankar,etc. are perishable. Coal is, however, excluded from both the categories and no advance is permissible on his article.

(b) Cases in which, in the interest of works, it is absolutely necessary to make petty advances, in such cases advances upto Rs. 250 may be allowed by subordinates.
(c) In all other cases, only with the sanction of the Government who may, in exceptional circumstances authorize such advances as may be deemed indispensable, taking the necessary precautions for securing the Government against loss and for preventing the system from becoming general or continuing longer than is absolutely essential. A register in Form RPWA 68 shall be maintained in respect of Advance Payments made in exceptional circumstances with the sanction of the Government.
(d) Note: The Executive Engineer has full powers to make advance payments to Electric Supply under taking under the Indian Electricity Act, 1910 for execution of works.

18. Completion

(i)"When whole of the work has been substantially completed and have satisfactory passed any Tests on Completion prescribed by the contractor, the Contractor may give a notice to that effect to the Engineer, with a copy to the Employer, accompanied by a written undertaking to finish with due expedition any outstanding work. The Engineer shall issue a certificate complying completion of the works to the contractor."

(ii) "If any part of the permanent work has been substantially completed and has satisfactorily passed

any Tests on Completion prescribed by the Contract, the Engineer may issue a Completion Certificate in respect of the part of the Permanent Work before completion of the whole of the Works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in the part of the Permanent Work during the Defects Notice Period." Hence the defect liability period starts on the date on which part/ substantial completion certificate is issued, for that particular part of the permanent work has been substantially completed.

19 Taking Over

"The Employer shall take over the whole works or section of works within Seven (7) days of issuance of Completion Certificate.

20. Site Environmental Plan (SEP)

The Contractor should prepare a detailed Site Environmental Plan (SEP) as per the Environmental and Social Management Framework and EMP format attached for location/s identified to be potentially impacted such as but not limited to the work site, base camp. The SEP should include arrangement for disposal of sites for excavated materials, sanitary and other waste, and storage location for fuel, oil and lubricants, facilities for equipment, labour and housing, among others. The SEP should be reviewed and approved prior to construction activities by the Engineer.

21. Safety, Security and Protection of the Environment

(A) General

i. This section of the Specification sets out limitations on the Contractor's activities specifically intended to protect the environment.

ii. The Contractor shall take all necessary measures and precautions and otherwise ensure that the execution of the works and all associated operations on site or off-site are carried out in conformity with statutory and regulatory environmental requirements including those prescribed elsewhere in this document.

iii. The Contractor shall take all measures and precautions to avoid any nuisance or disturbance arising from the execution of the Works. This shall wherever possible be achieved by suppression of the nuisance at source rather than abatement of the nuisance once generated.

iv. In the event of any spoil, debris, waste or any deleterious substance from the Site being deposited on any adjacent land, the Contractor shall immediately remove all such material and restore the affected area to its original state to the satisfaction of the Engineer. This should be monitored regularly in accordance with the Environmental Management Plan.

v. During construction, the area should be to avoid trespassing of animals and people. Unauthorized persons should not be allowed within the construction area.

vi. During construction, there should be signs to inform public of on-going work, warning on dangers due to trenches along roads, excavations on different sites.

vii. Contact town authorities to arrange for the use of excavated material where possible, such as in construction projects, to raise the level of land prior to construction of roads or buildings, or to fill previously excavated areas.

viii. Especially for cleaning, desilting, and dredging of drainages: Contact town authorities to arrange for testing and analysis of sludge/excavated materials for hazardous components. If material are hazardous, coordinate with authorities for approve disposal sites;

ix. Prevent generation of dust by removing excavated materials as soon as it is excavated, by loading directly onto trucks and covering with tarpaulins to prevent dust during transportation.

x. All excavation should be done in the dry seasons to avoid any impacts on surface water

drainage if water collects in any quantity, it will need to be pumped out, and it should be then be donated to neighboring farmers to provide a beneficial use to the communities most affected by this aspect of the work.

xi. Plant five (5) trees for every tree to be cut and can only be cut after taking the necessary approvals.

xii. Consult town authorities to identify any buildings at risk from vibration damage and avoiding use of pneumatic drills or heavy vehicles in the vicinity.

xiii. Providing wooden bridges for pedestrians and metal sheets for vehicles to allow access across open trenches where required (including access to houses).

xiv. Carefully planning of transportation routes with the municipal authorities to avoid sensitive areas as far as possible, including narrow streets, congested roads, important or fragile buildings and key sites of religious, cultural or tourism importance.

xv. Consulting historical and archaeological authorities at both national and state level to obtain an expert assessment of the archaeological potential of the site. Alternate location should be considered if the area is medium or high risk.

xvi. Developing a protocol in conducting any excavation work to ensure that any chance finds are recognized and measured are taken to ensure they are protected and conserved this should involve having excavation observed by a person with archaeological field training, stopping work immediately to allow further investigation if any finds are suspected; and calling the state archaeological authority if a find is expected and taking any action they acquire ensuring its removal or protection in situ.

xvii. Living spaces for access between mounds of excavated soil and providing footbridges so that pedestrians can cross open trenches;

xviii. Increasing the workforce in these areas to ensure that work is completed quickly;

(B) . Water Quality

i. The Contractor shall prevent any interference with the supply to or abstraction from, and prevent any pollution of, water resources (including underground percolating water) as a result of the execution of the Works.

ii. Areas where water is regularly or repetitively used for dust suppression purposes shall be laid to fall to specially constructed settlement tanks to permit sedimentation of particulate matter. After settlement, the water may be re-used for dust suppression and rinsing.

iii. All water and other liquid waste products arising on the Site shall be collected and disposed of at a location on or off the Site and in a manner that shall not cause either nuisance or pollution.

iv. The Contractor shall not discharge or deposit any matter arising from the execution of the Works into any waters except with the permission of the Engineer and the regulatory authorities concerned.

v. The Contractor shall at all times ensure that all existing stream courses and drains within, and adjacent to, the Site are kept safe and free from any debris and any materials arising from the Works.

vi. The Contractor shall protect all watercourses, waterways, ditches, canals, drains, lakes and the like from pollution as a result of the execution of the Works.

22. Air Quality

i. The Contractor shall devise and arrange methods of working to minimize dust, gaseous or other air-borne emissions and carry out the Works in such a manner as to minimize

adverse impacts on air quality.

ii. The Contractor shall utilize effective water sprays during delivery manufacture, processing and handling of materials when dust is likely to be created, and to dampen stored materials during dry and windy weather. Stockpiles of friable materials shall be covered with clean tarpaulins, with application of sprayed water during dry and windy weather. Stockpiles of material or debris shall be dampened prior to their movement, except where this is contrary to the Specification.

iii. Any vehicle with an open load-carrying area used for transporting potentially dust producing material shall have properly fitting side and tail boards. Materials having the potential to produce dust shall not be loaded to a level higher than the side and tail boards, and shall be covered with a clean tarpaulin in good condition. The tarpaulin shall be properly secured and extend at least 300 mm over the edges of the side and tail boards.

iv. In the event that the Contractor is permitted to use gravel or earth roads for haulage, he shall provide suitable measures for dust palliation, if these are, in the opinion of the Engineer, necessary. Such measures may include spraying the road surface with water at regular intervals.

23. Noise

i. The Contractor shall consider noise as an environmental constraint in his planning and execution of the Works.

ii. The Contractor shall take all necessary measures so that the operation of all mechanical equipment and construction processes on and off the Site shall not cause any unnecessary or excessive noise, taking into account applicable environmental requirements. The Contractor shall use all necessary measures and shall maintain all plant and silencing equipment in good condition so as to minimize the noise emission during construction works.

iii. Using modern vehicles and machinery with standard adaptations to reduce mice and exhaust emissions and ensuring they are maintained to manufactures' specifications.

24. Control of Wastes

i. The Contractor shall control the disposal of all forms of waste generated by the construction operations and in all associated activities. No uncontrolled deposition or dumping shall be permitted. Wastes to be controlled shall include, but shall lot be limited to, all forms of fuel and engine oils, all types of bitumen, cement, surplus aggregates, gravels, bituminous mixtures, etc. The Contractor shall make specific provision for the proper disposal of these and any other waste products, conforming to local regulations and acceptable to the Engineer.

25. Emergency Response

i. The Contractor shall plan and provide for remedial measures to be implemented in the event of occurrence of emergencies such as spillages of oil or bitumen or chemicals.

ii. The Contractor shall provide the Engineer with a statement of the measures he intends to implement in the event of such an emergency which shall include a statement of how he intends to provide personnel adequately trained to implement such measures.

iii. Should any pollution arise from the Contractor's activities he shall clean up the affected area immediately at his own cost and to the satisfaction of the Engineer, and shall pay full compensation to any affected party.

26 Protection of Trees and Vegetation

The Contractor shall ensure that no trees or shrubs or waterside vegetation are felled or harmed except for those required to be cleared for execution of the Works. The

Contractor shall protect trees and vegetation from damage to the satisfaction of the Engineer. No tree shall be removed without the prior approval of the Engineer and any competent authorities. Should the Contractor become aware during the period of the Contract that any tree or trees designated for clearance have cultural or religious significance he shall immediately inform the Engineer and await his instructions before proceeding with clearance. In the event that trees or other vegetation not designated for clearance are damaged or destroyed, they shall be repaired or replaced to the satisfaction of the Engineer, who shall also impose a penalty to twice the commercial value of any timber affected, as assessed by the Engineer.

27. Water Supply and Electric Power

The Contractor shall make his own arrangements at his own expense for water supply and electric power supply for construction, testing and other purposes. Only clean water free from deleterious

28. Fire Prevention

68.1The Contractor shall take all precautions necessary to ensure that no vegetation along the line of the road outside the area of the permanent works is affected by fires arising from the execution of the Works. The Contractor shall obtain and follow any instructions of the competent authorities with respect to fire hazard when working in the vicinity of gas installations. Should a fire occur in the natural vegetation or plantations adjacent to the road for any reason the Contractor shall immediately suppress it. In the event of any other fire emergency in the vicinity of the Works the Contractor shall render assistance to the civil authorities to the best of his ability. Areas of forest, scrub or plantation damaged by fire considered by the Engineer to have been initiated by the Contractor's staff or labour shall be replanted and otherwise restored to the satisfaction of the Engineer at the Contractor's expense.

29. Fossils

The Contractor shall make his staff available for briefing on archaeological matters as directed by the Engineer.

30. Clearance of Contractor's Facilities

On or before expiry of the Defects Notice Period the Contractor shall clear away all his temporary facilities including but not limited to offices, camps, storage and holding yards, workshops, crushing and mixing plant, diversion and haul roads so that the land is returned to at least its previous condition and, in the case of agricultural land, potential productivity. Clearance shall include but not be limited to tasks such as the removal of unwanted structures, removal of metallic and concrete debris, removal and disposal of any soil contaminated by diesel, bitumen or other polluting material, ripping to relieve compaction, grading, replacement of topsoil, and turfing and grassing, as appropriate. Where improvements have been made such as land filling or installation of boreholes or construction of boat landings these may be retained subject to the agreement of the landowner. The Employer reserves the right to inspect the site of any facilities established or used by the Contractor in connection with the Works and to undertake any corrective measures necessary to restore the land, and to recover the cost from monies due or to become due to the Contractor.

31. Fair Wages

31.1 The Contractor shall pay not less than fair wage/minimum wages to laborer’s engaged by him on the work as revised from time to time by the Government of Rajasthan, but the Government shall not be liable to pay anything extra for it except as stipulated in price adjustment clause (Clause 41) of the Contract.

(Explanation: "Fair wage" means minimum wages for time or piece work, fixed or revised, as established by the State Government under the Minimum Wages Act, 1948.)

31.2 The Contractor shall, notwithstanding the provisions of any Contract to the contrary, cause to be paid fair wages to laborers indirectly engaged on the work, including any labour engaged by his sub-Contractors in connection with the said work, as if the laborers have been immediately or directly employed by him.

31.3 In respect of all laborers, immediately or directly employed on the work, for the purpose of the Contractor's part of this agreement, the Contractor shall comply with or cause to be complied with, the Public Works Department Contract Labour Regulations' made, or that may be made, by the Government, from time to time, in regard to payment of wages, wage period, deductions from wages, recovery of wages not paid, and unauthorized deductions, maintenance of wages register, wage card, publication of scale of wages and other terms of employment, inspection and submission of periodical returns, and all other matters of a like nature.

31.4 The Engineer shall have the right to deduct, from the money due to the Contractor, any sum required or estimated to be required for making good the loss suffered by a worker or workers by reasons of non-fulfillment of the conditions of the Contract for the benefit of the worker or workers, non-payment of wages or of deductions made there from, which are not justified by the terms of the Contract or as a result of non-observance of the aforesaid regulations.

31.5 Vs-à-Vs the Government of Rajasthan the Contractor shall be primarily liable for all payments to be made and for the observance of the regulations aforesaid, without prejudice to his right to claim indemnity from his sub-Contractors.

31.6 The regulations, aforesaid, shall be deemed to be part of this Contract and any breach thereof, shall be deemed to be breach of the Contract.

32. Safety and Accident Prevention Officer

Due precautions shall be taken by the Contractor, at his own cost, to ensure the safety and protection against accidents of all staff and labour engaged on the Works, local residents in the vicinity of the Works, and the public travelling through the Works. The Contractor shall have on his staff on Site a designated officer qualified to promote and maintain safe working practices. This officer shall have authority to issue instructions and shall take protective measures to prevent accidents, including but not limited to the establishment of safe working practices and the training of staff and labour in their implementation.

33. Protective Clothing and Footwear

33.1 The Contractor shall, at his own expense, provide protective clothing and equipment to all staff and labour engaged on the Works to the satisfaction of the Engineer, and on his failure to do so the Employer shall be entitled to provide the same and recover the cost from the Contractor. Such clothing and equipment shall include, at a minimum, protective footwear for workmen undertaking concrete mixing work, protective footwear and gloves for any workmen performing bituminous paving works, protective footwear, clothing, cream, gauntlet-type gloves, hats, safety glasses or goggles and filter masks for workmen undertaking lime stabilisation works, hard hats for workmen engaged on bridge construction, and otherwise as appropriate to the job in hand and to the Engineer's satisfaction.

33.2 Ensuring that all workers are provided with and use appropriate Personal Protective Equipment (PPE), Health and safety training should be conducted for all site personnel;

availability of documented procedures to be followed for all site activities; and documentation of work-related accidents;

34. First-Aid Services

The Contractor shall, at his own expense, provide first aid equipment at all camps and work sites to the satisfaction of the Engineer, and shall ensure that at all work sites where 40 or more persons are engaged on the Works there shall at all times be a person qualified in first-aid with access to appropriate first-aid equipment. A first-aid post shall be established at each base camp comprising a suitable room with two beds, washing and examination facilities, appropriate medical supplies, and staffed on a full-time basis by a qualified paramedical attendant.

35. Health and Pests

The Contractor shall at his own expense and throughout the period of the Contract ensure that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements for his staff and labour, and shall comply with all the regulations and requirements of the local health authorities with respect to disease prevention and control. He shall warn his staff and labour of the dangers of communicable diseases including those transmitted by insects, water, faecal/oral contact and sexual activity. The Contractor shall take the precautions necessary to protect all staff and labour employed on the Site from insect nuisance, rats and other pests and minimise the dangers to health and the general nuisance caused by the same. Should malaria or other insect-borne diseases be prevalent in the area, he shall provide his staff and labour with suitable prophylactics, equip living accommodation with screens and bed-nets, and carry out spraying with approved insecticides, as appropriate and to the Engineer's satisfaction.

36. Disorderly Conduct

The Contractor shall at all times take reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his employees and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same. "Disorderly conduct" shall include but not be limited to harvesting of natural resources such as firewood or fish by the Contractor's labour when this is done to the detriment of pre-existing local interests.

37. Records of Labour and Accidents

The Contractor shall maintain full records of numbers, working hours and wages of labour, safety, health and welfare of persons, accidents, and damage to property and make such reports on these matters to the Engineer as he may from time to time prescribe.

38. General

Unless otherwise indicated elsewhere in the Contract, The General Specification for civil works and the Quality Assurance and Quality Control (QAQC) document, as issued by the PMU of RUIDP, shall be followed. The QAQC document of JDA is an integral part of the document and it will be provided with the bid document. A copy of the same shall be made available at the site by the contractor.

39. Site Office for Engineer and Other Supervisory Staff

The Contractor shall arrange to provide office of minimum 300 sq. ft. size as per specification with two tables, four chairs, one steel almirah, sufficient number of display board, telephone etc. fully furnished office accommodation within 15 days from the date of commencement of same and shall become property of the Contractor at the completion of

the work. The electrical charges / water charges and all other charges shall be arranged within the area of the work. Approval shall be taken from Engineer prior to making arrangement of the office. The construction of site office and its or maintenance are incidental to the work. The office shall be functional until work is completed. If Engineer found that office arranged by the contractor is not being maintained properly then Engineer has right to deduct a reasonable amount from that payment.In case adequate space is not available for setting up of such office, the Engineer may waive such requirement on being requested by the Contractor, in writing.

40. Field Laboratory

40.1 Within 15 (Fifteen) days from the date of commencement of the work, the Contractor shall arrange to provide a 250 sqft. fully furnished and adequately equipped field laboratory as per Specifications and directions of the Engineer, including maintenance of the same. This shall be removed at the completion of the work. All dismantled items of field laboratory and all equipment shall be property of the Contractor at the completion of the work. The Laboratory shall be functional till the work is completed. If Engineer found that Laboratory arranged by the Contractor is not being maintained properly then Engineer has right to deduct a reasonable amount from payment. The construction of Field Laboratory& its maintenance are incidental to the work. Notwithstanding the above, the Engineer may agree to the Contractor's proposal to use facilities of accredited/ Government laboratories, upon scrutinising the details of such laboratories, submitted by the Contractor. Even in that case also, the Contractor will keep and maintain certain basic equipment at site as mentioned under Section V: Procuring Entity's Requirement.

40.2 The calibration of the laboratory equipments and instruments shall at the initial stage to be certified by agencies approved by the Engineer. Laboratory equipments shall be properly maintained and calibrated throughout the period of the Contract by the Contractor at his own expense. The Contractor shall notify the Engineer in sufficient advance prior to conducting any tests for the materials and work. The Engineer will also inspect the laboratory and the contractor shall provide adequate facilities to the Engineers for his independent verification of the accuracy and adequacy of the facilities.

41. Pre-Construction Inspection, Testing & Review of Data for Materials, Plant & Equipment

41.1 The contractor shall place order for the material and the equipment only after the approval of the Engineer. The Contractor shall submit the detailed drawings for the approved manufacturer and the procedure of submission, review and revision shall be specified herein below.

41.2 The Contractor shall inform the Engineer about the likely dates of manufacturing, testing and dispatching. The Contractor shall notify the Engineer for Inspection and Testing, at least twenty-eight days prior to packing and shipping and shall supply the manufacturer's test results and quality control certificates. The Engineer will decide whether he or his representative will inspect and test the material/ equipment or whether he will approve it on the basis of manufacturer's certificate.

41.3 The inspection and test categories shall be applied prior to delivery of the equipment, of various categories as indicated in the technical specifications for each type of the equipment.

Category A: - The Drawing has to be approved by the Engineer before manufacturing and Testing. The material has to be inspected by the Engineer or by an Inspecting agency approved by the Engineer at the manufacturer's premise before packing and dispatching. The Inspection charges of the agency will be borne by the Employer but the contractor has to pay the inspection charges. The Contractor shall provide the necessary equipment and facilities for tests and the cost, thereof, shall be borne by the

Category B:- The drawings of the Equipment have to be submitted and to be approved by the Engineer prior to manufacture. The material has to be tested by the manufacturer and the manufacturer's test certificates are to be submitted and approved by the Engineer before dispatching of the Equipment. Notwithstanding the above, the Engineer, after examination of the test certificates, reserves the right to instruct the Contractor for retesting, if required, in the presence of Contractor's representative.

Category C: The material may be manufactured as per standard and delivered to the site.

42. Supply of Colored Record Photographs

The Contractor shall, at his own cost, arrange to take colour photographs at various stages / facets of the work including interesting and novel features of the work as directed by the Engineer and supply two copies of colour record photographs mounted in the albums including negatives with specification and these shall be kept by Employer.

43. Public Awareness / Information Display

The Contractor shall, at his own cost, arrange to provide, erect and maintain necessary display boards/ banners etc. at selection points of project site giving such information as considered necessary for public awareness/ information/ safety as directed by the Engineer.

44. Contractor's Responsibilities

The contractor shall promptly inform the Employer and the Engineer of any error, omission, fault, or any other defect in the design or drawings or specification for the works, which he discovers when reviewing the contract documents, or in the process of execution of the works. The Engineer will resolve the ambiguity or correct the error and will notify the contractor of the interpretation to be adopted.

45. Services

45.1 Underground and overhead services are likely to be met with during construction. These are to be protected against damage by the Contractor at his own cost.

45.2 The contractor shall be required to carry out removal / shifting of existing utilities at his own cost. The contractor work program shall include this activity. The work shall be carried out under supervision of concerned department. The supervision charges of the line agencies shall be paid by the contractor and shall be reimbursed on actual on submission of receipt.

45.3 In cases of utilities to be shifted by Govt. departments, no amount shall be paid extra for shifting/ co-ordination. The employer would provide full support to contractor in coordinating with line agencies; however, no claim on account of delay in shifting of utilities by line department will be admissible.

46. Setting Out

46.1 The Contractor(s) shall set out the whole of the work in conjunction with an officer to be deputed by the Engineer and during the progress of the work to amend on the requisition

of the Engineer any errors which may arise therein and provide all the necessary labour materials and equipments for so doing. The contractor(s) is/are to provide all tools, plant, machinery, labour and materials (with the exceptions noted in the relevant clauses for issue of departmental materials as per schedule attached) which may be necessary and required for the work. All materials and workmanship shall conform to the relevant specifications mentioned in the tender documents.

46.2 During execution of pile foundation, if there is any variation in soil strata which was not anticipated earlier, the matter shall be referred to Engineer – in – charge for review and modification of design by the competent authority, if considered necessary. Time taken in this process is consider in the original completion period, however no claim on account of delay in getting the sanction from competent authority will be admissible.

46.3 The contractor shall carryout the detailed topographic survey at site and prepare the pre-commencement survey map for approval of the Engineer's representatives. Based on the approved Pre-commencement survey map, the contractor will prepare the necessary working drawings for the purpose of execution.

46.4 Contractor shall be responsible for taking all traffic block and shutdowns etc. from west central railway authority for execution in railway land / spans. Contractor will get all designs and drawings approved from west central railway authority for all temporary and permanent works of railway land / spans. This will be all incidental to the work. No separate claim on this account shall be payable.

46.5 Defect liability period shall be 5 year. Contractor shall furnish an affidavit from the manufacture / supplier firms before actual date of completion.

47. Labor

47.1 Engagement of Staff and Labor

a) Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, housing, feeding and transport.

b) The contractor shall pay equal wages for men and women for work of equal value or type.

c) The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills.

d) The Contractor shall be responsible for obtaining all necessary permit(s) and/or Visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into the country where the Site is located. The Employer will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor's personnel.

e) The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in

providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.

f) Be required to employ atleast 50% of the labour force from communities within a radius of 2kms from the site, if sufficient people are available.

47.2 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Employer's Personnel.

47.3 Labor Laws

(a) The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

(b) The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.

(c) The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labor.

47.4 Rates of Wages and Conditions of Labour

(a) The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

(b) The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages and allowances as are chargeable under the Laws for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

47.5 Working Hours

(a) No work shall be carried out on the Site on locally recognized days of rest, or outside the Normal working hours, which shall be 9.00 AM to 5.00 PM on all days of the week., unless:

(i) otherwise stated in the Contract,

(ii) the Engineer gives consent, or

(iii the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer.

(b) If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Engineer's consent thereto, the Engineer shall not unreasonably withhold such consent.

(c) This Sub-Clause shall not apply to any work, which is customarily carried out by rotary or double-shifts.

47.6 Facilities for Staff and Labor

(a) Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

(b) The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

47.7 Health and Safety

(a) The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

(b) The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the performance of the Contract, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

(c) The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

(d) The Contractor shall throughout the contract (including the Defect Liability Period):

(i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Employer's and Engineer's' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular;

(ii) provide male or female condoms for all Site staff and labor as appropriate; and

(iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Facilities under Sub-Clause 18.2 an alleviation program for Site staff and labor and their

families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation of this program shall not exceed the Provisional Sum dedicated for this purpose

47.8 Funeral Arrangements

In the event of the death of any of the Contractor's personnel or accompanying members of their families, the Contractor shall be responsible for making the appropriate arrangements for their return or burial, unless otherwise specified in the SCC.

47.9 Records of Contractor's Personnel

The Contractor shall keep accurate records of the Contractor's personnel, including the number of each class of Contractor's Personnel on the Site and the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis in a form approved by the Engineer and shall be available for inspection by the Engineer. Until the Contractor has completed all work.

47.10 Supply of Foodstuffs

The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.

47.11 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

47.12 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

47.13 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal by Contractor's Personnel.

47.14 Arms and Ammunition

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

47.15 Prohibition of All Forms of Forced or Compulsory Labour

The contractor shall not employ "forced or compulsory labor" in any form. "Forced or compulsory labor" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

47.16 Prohibition of Harmful Child Labor

The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. “Child” means a child below the statutory minimum age of 14 years.

48. MONITORING

Provision for regular monitoring will be commissure as per the Environmental Management Plan and actions will be taken in case of non-compliance.

49. Change of Scope

49.1 Authority may, notwithstanding anything to the contrary in this Agreement, require provision of such addition/deletion to the works and services on or about the Project which are beyond the scope of the Project as contemplated by this Agreement (Change of Scope), Provided such change do not require expenditure exceeding/ reducing by 10% of project cost and do shall be made by Authority by an order (the “change of Scope order”) issued in accordance with the procedure set forth in sub clause 49.2

49.2 Procedure for Change of Scope

a. Authority shall whenever it desires provision of addition/deletion of works and services referred to in sub clause 49.1 above, issue to bidder a notice of Change of Scope (the “Change of Scope Notice”) through Engineer In-charge.
b. Upon receipt of Change of Scope Notice, the bidder shall, within a period of 15 (fifteen) days, provide to the EngineerIn-charge such information as is necessary and reasonable together with preliminary documentation in support of the following:
    I. The impact which the Change of Scope is likely to have on the Project Completion Schedule if the work is required to be carried out before construction period and
    II. The cost to the bidder of complying with such Change of Scope Notice on account of increases in quantities of items of work mentioned in the Bill of Quantities at the rate mentioned therein. In case the Bill of quantities does not carry certain items of work required under the Change of Scope, the bidder shall provide the analysis of rates-for carrying out such items of work.
c. Engineer-in-charge shall review the information provided by the bidder, asses the change in quantities of items of work, verify the analysis of rates if required, determine the additional cost to the bidder as a result of such Change of Scope and determine the extension/ reduction, if any, to the construction period provided that there will be no change in construction period if the change in the project cost is upto 2%, Provided that where the change in project cost is beyond 2%, then the proposed extension/ reduction to the construction period would taken into account the total change in the project cost (including 2% above).

d. Authority shall issue the Change of Scope Order within a period of 15 (fifteen) days from the date of recommendation made by the Engineer In-charge in accordance with preceding sub clause (c) above.
e. The Change of Scope Order shall be effective and binding upon receipt thereof by the bidder, Notwithstanding a Dispute regarding cost arid time for implementation of such order, the bidder shall proceed with the performance of such order promptly following; receipt thereof. Any Dispute regarding the extension in the construction period recommended by the Engineer In-charge shall be resolved in accordance with the Dispute Resolution Procedure.

SECTION V C
CONTRACT FORMS

Table of Contents

1. Letter of Acceptance

Letter of Acceptance

[on letterhead paper of the Procuring Entity]

No. . . . . . *Dated . . . . . .*

To: . . . . . ***[name and address of the Contractor]*** . . . . . .

Subject: . . . . . ***[Notification of Award for the Works]*** . . . . . .

This is to notify you that your Bid dated . . . . [***date]*** . . . . for execution of the . . . . . ***[name of the contract and identification number, as given in the Contract Data]*** . . . . . for the Accepted Contract Amount of the equivalent of . . . . . ***[.amount in numbers and words and name of currency]*** . . . . . ., as corrected and modified in negotiations and in accordance with the Instructions to Bidders has been accepted by ***[designation of the Procuring Entity]***…….. The date of commencement and completion of the Works shall be: ……

You are requested to furnish the Performance Security/ Performance Security Declaration within …… Daysin the form given in the Contract Forms for the same for an amount equivalent to Rupees …… within ……. days of notification of the award valid up to 60 days after the date of expiry of Defects Liability Period and maintenance period, if applicable, and sign the Contract, failing which action as stated in sub-section 2 of section 42 of the Rajasthan Transparency in Public Procurement Act, 2012andInstructions to Bidders shall be taken.

Authorized Signature: .....

Name and Title of Signatory: THE EXECUTIVE ENGINEER (HQ) Jaipur Development Authority

Designation: .....

2. ContractAgreement.

Contract Agreement Works

THIS AGREEMENT made this ….. day of ……..2022, between Government of Rajasthan, represented by the Executive Engineer, JDA (Jaipur development Authority) Ram KishorVyasBhawan, Indira Circle, JawaharLal Nehru Marg, Jaipur-302004 (hereinafter "the Employer") which expression shall, where the context so admits, be deemed to include his successors in office and assigns, of the one part and M/S _____(Contractor name)_____(Contractor address) (hereinafter "the Contractor"), which expression shall, where the context so admits, be deemed to include his heirs, successors, executors and administrators, of the other part:

WHEREAS the Employer desires that the Works known as . . . . . [name of the Contract] . . . . .should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein, and for which the Contractor has submitted Performance Security for Rupees ---------- in the form of ----------(For Jaipur Development Authority)

The Employer and the Contractor agree as follows:

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

   a) the Letter of Acceptance;
   b) RFP as uploaded in eproc.rajasthan.gov.in; sppp.rajasthan.gov.in
   c) Any addendum, corrigendum issued.
   d) the Bid of the Contractor as accepted along with the correspondence done on it, if any;

3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor Rupees_____ /- Rupees (word only) + GST as consideration for execution and completion of the Works and the remedying of defects therein, in the manner prescribed by the Contract.
5. All the terms and conditions of NIT_____, Jaipur will be part of this agreement.

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

Signed by Executive Engineer Jaipur Development Authority	Signed by Contractor for and on behalf the Contractor
Witness, Name, Signature, Address	Witness, Name, Signature, Address
Signed by	Signed by

3.Performance Security

(Format of the Bank Guarantee Bond Against Earnest Money Deposit,

<u>En cashable at branch of the bank in Jaipur City)</u>.

The Secretary,

Jaipur Development Authority

Jaipur.

Whereas Jaipur Development Authority through Executive Engineer HQ, (hereinafter called 'The Jaipur Development Authority') has called for tenders for execution of work " **Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur"**estimated to cost Rs. …….. (Rupees…….only) on …… (Date) or any extended date as per normal rules.

1. In consideration of Jaipur Development Authority having made such a stipulation in Rules and M/s ……(name of contractors) are desirous of depositing Earnest Money Rs. …….. (Rupees ……..only) in the form of Bank Guarantee as Earnest Money in order to participate in the tender for work abovementioned as per Rules and will be so permitted on production of a Bank Guarantee for Rs. …….. (Rupees…….only) We…….(name and address fo Bank) having Registered office hereinafter referred to as the Bank at the request of M/s …… Contractor (s), do hereby undertake to pay to Secretary, Jaipur Development Authority an amount not exceeding Rs. ...../- (Rupees .....only) on demand.
2. We …….....(name and address of bank)....., do hereby undertake to pay Rs. ...../- (Rupees ..... Only) The amount due and payable under this guarantee without any demur or delay, merely on a demand from Secretary, Jaipur Development Authority any such demand made on the bank by the Jaipur Development Authority shall be conclusive and payable by the Bank under the guarantee. The Bank Guarantee shall be completely at the disposal of Secretary, Jaipur Development Authority and We .....(name and address of bank)....., bound ourselves with all directions given by Jaipur Development Authority regarding this Bank Guarantee However our Liability under this guarantee shall be restricted to an amount not exceeding Rs. ...../- (Rupees .....Only).
3. We the .....(Name and address of Bank) ....., undertake to pay Jaipur Development Authority any money so demanded notwithstanding any dispute or disputes raised by the contractor (s) any suit or proceeding pending before any Court or Tribunal or Arbitrator etc. Relating thereto our liability under these presents being absolute, unequivocal and unconditional.
4. We .....(Name and address of Bank) ...., further agree with Jaipur Development Authority that the Jaipur Development Authority shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Jaipur Development

Authority against the said Contractor (s) and to forbear or enforce any of the terms and conditions relating to said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor (s) or for any forbearance, act or omission on the part of the Jaipur Development Authority or any indulgence by the Jaipur Development Authority or the said Contractor (s) or by any such matter or thing whatsoever which would but for this provision have effect of so relieving us.

5. The liability of us ..... (Name and address of Bank) ...., under this guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor (s).
6. We .....(Name and address of Bank) ...., lastly undertake not to revoke this guarantee except with the consent of Jaipur Development Authority in writing.
7. This Bank Guarantee shall remain valid and in full effect, until it is decided to be discharged by the Jaipur Development Authority. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs.....
8. It shall not be necessary for Jaipur Development Authority to proceed against the contractor before proceeding against the guarantee herein contained shall be enforceable against the Bank not withstanding any security which Jaipur Development Authority may have obtained or obtain from the Contractor.
9. That on demand of JDA, this Bank Guarantee is in cashable at following branch in Jaipur City.

    1. Name of Bank:

    2. Name of the branch with branch code:

    3. Address:

    4. E-Mail Id:

    5. Telephone No.

    6. Fax No.:

    If the last date of expiry of the Bank Guarantee happens to be a holiday of the Bank, the Bank Guarantee shall expire on the close of the next working day.

10. We .....(Name and address of Bank) ...., undertake that the amount covered under the above Bank Guarantee shall be automatically be credited in the accounts of JDA in ICICI Bank, JDA Campus, Jaipur through IFSC Code No ICIC0006754, Bank Account No. 675401700518 on the date of expiry or its validity, unless the agencies get it re-validated well before its expiry date or produce NOC from JDA in written for its release.
11. All claims under the guarantee will be **payable at Jaipur**.
    This guarantee will be returned to us as soon as the purpose for which it is issued is fulfilled' The BG Confirmation letter No is an integral part of the BG No.

Date _____Signature of the Bank_____

Witness_____ Seal _____

[Signature, Name and Address]

[Note: To be furnished on appropriate non-judicial stamps.]

4.PerformanceSecurityDeclaration (Applicable for Public Undertaking departments)

Form of Performance Security Declaration

Date: _____ ***[insertdate (as day, month and year)]***

Contract Name and No.: _____***[insert name and number of Contract]***

To: _____ ***[insert Designation and complete address of Procuring Entity]***

We, the undersigned, declare that:

We understandthat, accordingtoyourconditions, theContractmustbesupportedbyaPerformanceSecurity Declaration as a guarantee to ensure fulfillment of our all performance obligations under the Contract for _____ ***[insert name of subject matter of procurement]***.

We acceptthatwewillautomatically besuspendedfrombeingeligibleforbiddinginany contractwith you for theperiodoftimeof _____***[Procuring Entitytoindicateheretheperiodoftimeforwhichthe Procuring EntitywilldeclareaBidderineligibletobeawardedaContractiftheperformanceSecurity Declarationistobeexecuted]***starting on the date that we receive a notification from you,the _____***[Designation of the Procuring Entity]***thatourPerformance Security Declarationisexecuted**,** ifwe are inbreach of any of our performance obligationunder the conditions of the Contract,

We understand this Performance Security Declarationshallexpire after 60 days of completion of our all obligations under the Contract including Defect Liability, warranty/ Guarantee, etc. in accordance with the conditions of the Contract.

Signed: _____

[insert signature of person whose name and capacity are shown]

In the capacity of: _____

[insert legal capacity of person signing the Performance Security Declaration]

Name:_____

[insert complete name of person signing the Declaration]

Duly authorized to sign theContract for and on behalf of: _____

[insert complete name and address of the Bidder]

Dated on _____day of _____, _____***[insert date of signing]***

Corporate Seal _____

SECTION VII
DRAWINGS

Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur

(Indicative Quantities for Reference purpose only)

For Civil Work

S.N.	ITEM	UNIT	QUANTITY
	MASONRY WORKS		
	Internal Masonry		
1	Providing & Laying autoclave aerated blocks masonry with AAC Blocks of Grade-I Conforming to IS:2185 Part:III in superstructure above plinth level with cement mortar 1:4 (1 cement: 4 coarse sand) .The rates includes providing and placing in position 2 Nos. 6 mm dia M.S. bars at evry third course of masonary.		
A	625x200x100 mm thk. AAC Block Masonry Partition Walls	Cum	137.90
B	625x200x200 mm thk. AAC BlockMasonry Walls	Cum	495.00
	External Masonry		
2	Exposed Random Rubble stone masonary (Teja Stone from Natata, Saiwal, Jaipur/ Siwar Pink sandstone)for superstructure above plinth level one storey height above 30 Cm. thick wall As per Detail to be provided by JDA		
	375mm thk. Exposed Sandstaone Masonry Walls	Cum	2024.99
3	Installation (Delivery & Compaction) of Stabilized Rammed Earth (SRE) walls by blending aggregates, sand and cement stabilisers with enough water and waterproofing admixtures to achieve a damp, optimally compactable compound under guidance of specialized vendor. Water based material such as acrylics, latexes, PVA or other polymer emulsions to be used as materials for internal dust sealing with adequet dilution as per instructons As per Detail to be provided by JDA		
	450mm thk. Rammed Earth Walls Stabilized Rammed Earth, CSEB (Compacted Stabilized Earth Blocks),	Cum	559.84
	PARTITION WALLS		
4	Installation (Providing and fixing) of Modular Toilet Partitions Cubicles (Greenlam or equi.) with required Hardware accessories, complete in all manner. Vibrance-Serene-Suede-1995 As per Detail to be provided by JDA (Thickness 12mm, Door 600x1785, Divider Height 1820, Overall Height 1995, Depth -NA-, Width 1267)		
	Modular Toilet Partitions (Greenlam or equi.)	Sqm	128.51
	FLOORING WORKS		
5	Providing and fixing First quality with uniform texture Stone On floor 15-18 mm thick over 30mm (Av.) thick base of CM 1:4 (1 cement : 4 coarse sand) jointing with white cement mortar 1:2 (1 white cement : 2 marble dust) & In Skirting shall be fixed to the wall surface using 1:3 cement sand mortar with a top layer of white cement and to wood ply surfaces using wood to stone adhesive with pigment to match the shade of the stone slab including grinding, rubbing and polishing and moulding as per design and drawing complete.		
A	Polished Garda stone from Buddhpura, Kota-Chittor Road, Granite, Marble and any other stone specified by JDA for Internal Areas except Museum	Sqm	3059.7
B	Polished Garda stone from Buddhpura, Kota-Chittor Road, Granite, Marble and any other stone specified by JDA for Museum Area	Sqm	8653.50
C	Flamed/Leathered Finish Garda stone from Buddhpura, Kota-Chittor Road , Granite for Ramps & O.T.S. Areas (outdoor/open areas)	Sqm	2542.75

6	Providing and fixing Heat Resistant Terrace Tiles (300 mm x 300 mm x 20 mm) withSRI (solar refractive index) > 78, solar reflection > 0.70 and initial emittance > 0.75 onwaterproof and sloped surface of terrace, laid on 20 mm thick cement sand mortar inthe ratio of 1:4 (1 cement : 4 coarse sand) and grouting the joints with mix of whitecement & marble powder in ratio of 1:1, including rubbing and polishing of the surfaceupto 3 cuts complete, including providing skirting upto 150 mm height along theparapet walls in the same manner and joint filling with white cement and colour pigment As per Detail to be provided by JDA		
	Heat resistant terrace tiles		
7	Providing and laying M30 grade controlled cement vacuum processed concrete pavements including mixing and vibrations concrete with necessary needle vibrators and surface with screed board vibrating complete in all respect with 20/25 mm stone aggregate (crusher broken) including anti-skid textured finish to required camber/ super lavation and grade including curing etc. as per specification with cement concrete M-30 grade including cost of Steel frame work for sides of C.C. pavement consisting of M. S. channels flats and angles with required steel pegs (some of them may left embedded in concrete/ including providing frame work. Cutting of construction joint/ longitudinal joint 4 to 6 mm. wide using mechanical concrete cutter including cost of diamond bit cutting wheel and filling of bitumen sealing compound in groove 25mm thick.including cost of sealing compound. Synthetic Polyester Triangular Construction Fiber of length 6 mm / 12 mm / 18 mm with specific gravity 1.34 to 1.40 and diameter 10 - 40 microns and melting point > 220 degrees centigrade by using 125 gm fiber for 50 kgs		
	150mm thk. VDC (Floor Concrete at Basement)	Sqm	5702.85
8	Providing and fixing 1st quality MAT finished ceremic tile size 300x300mm confirming to IS : 13755 and IS : 15622 colour suchas white, grey, ivory, fume red brown, light green, light blue and other light shades in floors, steps, pillars etc. laid on a bed of neat cement slurry finished with flush pointing in the white cement mixed with pigment to match the shade of the tile complete (including the cost of cement mortar bed 1:4		
	In toilets	Sqm	5702.85
	FALSE CEILING WORKS		
9	Providing and fixing in position P.O.P. decorative false ceiling over G.I. metal frame work of appd. quality and wire mesh as per standard detail. The main G.I. frame (24g x 2" x 1") shall be at 2'6" c/c both ways and intermediate frame (21/2" x ¾" x 24g) shall be at 15" c/c both ways. The main G.I. member to be hanged with help of G.I angle of 1" x 1" x 24 gauge and additional M.S flats 3/4" x 1/8"/m.s angle (duly painted with red oxide) and dash fasteners and adjustable clamps with nuts and bolts including all necessary work required. Expanded metal mesh (0.07 Kg/Sft) shall be firmly stretched and screwed to the intermediate frame with G.I. washers and average 20 mm plaster of paris to be applied on in two layers. Necessary provisions shall be made for cut outs for air conditioners supply, return air grills, slits, light fittings, smoke detector and music speaker etc. The job shall include making steps ceiling, vertical surfaces etc. 50% OF Ceiling Area.		
	In restaurant	Sqm	391.00
10	False Ceiling:-(Metallic type) Providing and fixing false ceiling G.I tiles metal sheet semiperforated of size 600 X 600mm GI. Section for grid suspension system cut outs to be made for accommodation light fixtures complete in all respect as per site condition.		
	Toilets	Sqm	252.90
	DOORS		
11	Well designed entry gate of hard wood, decorative carvings and designs, glass gates, air through system etc. as per elevation drawing and design approved by JDA.		
	Wooden and glass entry gates		

12	Providing and fixing of Pre-used wooden (ship-wood) Single or double rebate Frames and External grade board solid core single or double leaf flush door shutters ISI 2202-67 marked, 40 mm thick shutter with Decorative Teak veener both side with melamine polish, using Phenol formaldehye resin, in glue both sides with approved steel fittings complete as per Annexure 'A' IS 2202 (Part I & II) 1999/1983, with required Hardware accessories, complete in all manner As per Detail to be provided by JDA		
	Flush Doors (Both side Veneer Finish with Melamine polish)) + Pre-used Wooden Frame (Ship-wood)	Sqm	240.48
13	Supply & fixing of 83mm thick, having STC 38 Characteristics acoustic cum fire check door shutters, having Fire rating 120 Minutes minimum, including door frame of section 145mm x 75mm marrrantti wood fixed to the door jambs with anchor fastners as required, having infill of 47mm thick resin bonded glasswool of 24kg/cum density coated with FR Acrylic Sealant Sandwiched between two 9 mm thick calcium silicate boards (Starpan or equivalent) 100% without asbestos, Brucite and Meerschaum having a density not more than 1150kg/cum and thermal conductivity 0.14 W/M*K faced with 8mm thick commericial ply (green/merino/century) with heat activated intumescent fire seal strip of size 10mm x 4mm mounted in the grooves having hardwood lipping of size 15mm x 70mm and fire retradant 1mm thick laminate (merino/century/greenlam) facing on both sides in desired shade and colour. The door tobe complete with all acoustic seals RP 24,16 & 38 (Lorient/ Astroflame U.K./Raven/Marshall) . The work shall be executed as per drawings ,specifications & instructions of engineer in charge. (Note: Contractor to submit shop drawing & Test certificates from manufacturer (The Manufacturers should already have a test report with complete Seals tested from CBRI Roorkee for the total design including door closers and panic bar) for approval of the Engineer incharge) . Recommended Make: Gyptech / Navair. Providing and fixing panic bar / latch (Double point) fitted with a single body, Trim Latch & Lock on back side of the Panic Latch of reputed brand and manufacture to be approved by the Engineer- in- charge, all complete. For Double door. Make Enox / Hafele/ Dorma / Briton: Double Leaf (for all exits)		
	Fire Escape Doors (As/detail)	Sqm	183.72
	WINDOWS & DOOR WINDOW ASSEMBLY		
14	UPVC Windows & DW (DGU Toughened glass, 6mm+12mm+5mm), Seam less welding and Tracks / slider and mesh (Teak Finish with Hardware and accessories) as spcified by J.D.A.	Sqm	1164.29
	PLASTER		
15	Providing and Applying Gyproc Gypsum Plaster conforming to I.S.2547 (Part I & II)1976 internally at 12-15mm average thickness of Saint-Gobain India -Gyproc make, as per manufacturer's instructions at all floors and locations of masonary works, brick and RCC finished to correct line, level, smooth finish and plumb including preparing the surface, scaffolding, etc., complete to the entire satisfaction of the engineer at site. Providing and Fixing of Fiber mesh of 145 GSM of Saint Gobain Gyproc Make, at the junction of RCC and brick and in places of conduits work will be charged extra. Providing & Applying Gyproc Bond It on RCC Surfaces, a polymer bonding agent as a replacement of Hacking.**		
	Internal Areas except Toilets	Sqm	1164.29
16	20mm thk. Plaster on new surface on wall in cement sand mortar 1:4 including raking of joints etc. complete fine finish		
	Internal Plaster in toilets	Sqm	1262.90
	POINTING WORK		
17	Deep Groove Pointing on stone masonary in cement sand mortar 1:3 (1-Cement:3-Sand), finished and complete in all respect.		
	Exposed Stone Masonry Walls	Sqm	6194.13
	CLADDING/DADO		
18	Providing and fixing imported marble, 15-18 mm thick on Walls surface using 1:3 cement sand mortar with a top layer of white cement and to wood ply surfaces using wood to stone adhesive jointing with white cement mortar 1:2 (1white cement : 2 marble dust) with pigment to match the shade of the marble slab including grinding, rubbing and polishing & molding as perdesign &		

	drawing complete.		
	Lift Cladding in Sandstaone/ Granite / Tile		
19	Providing and fixing 1st quality standard white, grey, ivory, fume red brown, light green, light blue and other light shades glazed tiles confirming to IS : 13753 & IS :15622 of size 200mm x 300mm in walls, floors, steps, pillars etc. laid on a bed of neat cement slurry finished with flush pointing in the white cement mixed with pigment to match the shade of the tile complete (excluding the cost of cement plaster on walls and pillar)		
	Wall Tiles in Toilets	Sqm	683.33
	PAINTING WORKS		
20	**Internal Paint**		
	Wall painting with Asian Velvet Touch, Royal, etc Plastic Emulsion paint in Trowel finish of approved brand and manufactuer to give an even shadeTwo or more coats on new work including preparation of base with primer, putty, lippy complete in all respect. Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	Sqm	1164.29
21	**External Paint**		
	Finishing walls with textured exterior paint of required shade as per approved colour complete as per manufacturers specifications including primer coat and protecting coat Trowel Finish av. thickness 2000 to 2500 microns.		
	M.S Work		
22	MS work using MS Pipe/ Bar / Flat/ etc. and finishing with Paint As per Detail to be provided by JDA		
A	Main Entrance gate as per design		
B	Railing at staircase, ramps, cut outs etc	Mtr	1900.00
	FURNITURE WORKS		
23	**Fixed Furniture as per requirement**		
	Providng and fixing 600mm wide and 850mm length counters of 18mm thk. Commercial board cvered with 1.00mm thk. Laminate of appd. Shade and make. 75mm high two drawer units to be provided with 12mm thk. Ply base and front cover with finger grip detail fixed on telscopic chanel. Counter side to be made of 18mm thk. commercial board coered with 1.00mm thk. laminates of both sides with 35mm x 15mm steam beach lipping. Neccessary foot rest to be provided as / design. 675mm wide and 1050mm hight mirror with beved edge to be provided fixed on 9mm thk. ply.		
24	**Moveable furniture**		
A	90 no.s 4 seater Wooden Bench at Prayer Hall	Nos	90.00
B	50 no.s Tables (1.2mx0.75m) in Cafetaria	Nos	50.00
C	200 no.s Chairs in Cafetaria	Nos	200.00
D	1 no. Cash Counter in Cafetaria	Nos	1.00
E	2 no.s Chair for Cash Counter in Cafetaria	Nos	2.00
F	200 No.s of Lockers in Cloak Room (0.45x0.45x0.6m)	Nos	200.00
G	1 no. Storage unit in Cloak Room	Nos	1.00
H	Admin Block:		
I	4 no. Assistant Table	Nos	4.00

J	1 no. Head Table	Nos	1.00
L	5 no. of Chairs	Nos	5.00
M	2 no. Racks (3.60x0.45x2.10m)	Nos	2.00
N	20 no.s Staff Chairs	Nos	20.00
O	5 no.s Staff Tables with Side Table	Nos	5.00
25	Manually Operated Roller Blinds with required pelemet as per aproved design and drawings by JDA.		
	WATER PROOFING WORKS		
26	Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of: i) Ist course of applying cement slurry @ 4.4 Kg/sum mixed with water proofing compound conforming to IS 2645 in recommended proportions including rounding off junction of vertical and horizontal surface. Ii) IInd course of 20mm cement plaster 1:3 (1 cement: 3 coarse sand) mixed with water. proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.. iii) IIIrd course of applying blown or residual bitumen applied hot at 1.7 Kg per sqm. of area. iv) IVth course of 400 micron thick PVC sheet .(Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 Kg/sqm.)		
A	Toilets	Sqm	177.19
B	Courts	Sqm	3624.40
	PLINTH PROTECTION		
27	Providing and fixing First quality with uniform texture Stone On floor 15-18 mm thick over 30mm (Av.) thick base of CM 1:4 (1 cement : 4 coarse sand) jointing with white cement mortar 1:2 (1 white cement : 2 marble dust) & In Skirting shall be fixed to the wall surface using 1:3 cement sand mortar with a top layer of white cement and to wood ply surfaces using wood to stone adhesive with pigment to match the shade of the granite slab including grinding, rubbing and polishing and moulding as per design and drawing complete over 150mm thk. P.C.C. (1:4:8) and Kerbstone with required excavation & earth filling.		
	Plinth Protection at Courtyards	Sqm	300.00
	GOOD EARTH FILLING		
28	Supply and stacking Good soil of earth at site complete including loading, unloading and transportation etc.		
	Good Earth filling (Cinder fill)	Cum	1385.25
	MISCELLANEOUS ITEMS		
29	Providing and fixing Granite stone slab mirror polished and machine edge cut in walls, pillars, steps, Shelves, Sills Counters, Floors etc. laid on 12mm (Av.) thick base of cement mortar 1:3 (1 cement : 3 coarse sand) jointing with white cement mortar 1:2 (1white cement : 2 marble dust) with pigment to match the shade of the marble slab including grinding, rubbing and polishing complete, Jhunjhunu / Jalore (Red / Choclate Colour)		
A	Granite counter/partition in toilets	Sqm	16.80
B	Counter in kitchen		
30	Exposed Random Rubble stone masonary (Teja Stone from Natata, Saiwal, Jaipur/ Siwar Pink sandstone)for superstructure above plinth level one storey height above 30 Cm. thick wall As per Detail to be provided by JDA		
	Toe walls for railings and others as per requirement	Cum	106.875

31	Brick work in partition in super structure up to third storey 7 Cm. thick (brick on edges) using bricks of class designation 75 with nominal hoop rainforcement (2 Nos 6mm MS bar) at every fourth course in		
	Toe walls for railings and others as per requirement	Cum	65.55
32	Supplying and fixing in cement sand mortar 1:4 sand or other approved stone dassa or coping of thickness 75 to 100 mm (fine dressed) As per Detail to be provided by JDA		
A	Coping at Stone Toe Wall (50mm thk.) including rubbing, polishing and joint filling with white cement and colour pigment	Sqm	356.25
B	Coping at Brick Toe Wall (50mm thk.) including rubbing, polishing and joint filling with white cement and colour pigment	Sqm	285.00
33	Rebaring and fixing reiforcement bar in RCC for strengtheing the member with 25 mm dia steel bar in depth 200mm and fixied by fischer compound. in depth 300mm and fixied by fischer compound.		
	Item wherever requires	Nos.	200.00
34	Making of hole (width up to 150 mm) in R.C.C. slab/wall/beams by power driven drilling machine complete as per direction of EI above 150 mm thick		
	Item wherever requires	Nos.	100.00
35	Single Molded twin Shank Raised Pavement Markers of polycarbonate (manufactured from 3M, Avery or equivalent)	Nos.	500.00

For Electrical Works

INTERNAL ELECTRICAL WORKS

S.No	Description	Unit	Total Qty.
POINT WIRING AND SUBMAIN WIRING			
1.1	Wiring of light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq. mm nominal size FR PVC insulated unsheathed flexible copper conductor 1.1 kV grade and 1.5 sq. mm nominal size FR PVC insulated unsheathed flexible copper earth conductor 1.1 kV grade (IS:694) of approved make in surface / recessed ISI marked medium duty PVC conduit & it's accessories, round tiles,Hot Dipped Galvanized Modular Box of 20 SWG with earth terminal, 6 A Modular switch,Modular plate with grid plate, screws, making connections, testing etc. as required.		
1.1.1	Short point (up to 3 mtr.)	P. point	247
1.1.2	Medium point (up to 6 mtr.)	P. point	148
1.1.3	Long point (up to 10 mtr..)	P. point	99
1.2	Wiring of twin control light point with 1.5 sq. mm nominal size FR PVC insulated unsheathed flexible copper conductor 1.1 kV grade and 1.5 sq. mm nominal size FR PVC insulated unsheathed flexible copper earth conductor 1.1 kV grade (IS:694) of approved make in surface / recessed ISI marked medium duty PVC conduit & it's accessories, round tles, Hot Dipped Galvanized M.S Modular box of 20 SWG with earth terminal,6 A two way Modular switch, Modular plate with grid plate, screws, making connections, testing etc. as required.		
1.2.1	Short point (up to 3 mtr.)	P. point	
1.2.2	Medium point (up to 6 mtr.)	P. point	10
1.2.3	Long point (up to 10 mtr..)	P. point	
1.3	Wiring of 3 pin 6 amp. Light plug point with 1.5 sq. mm nominal size FR PVC insulated unsheathed flexible copper conductor 1.1 kV grade and 1.5 sq. mm nominal size FR PVC insulated unsheathed flexible copper earth conductor 1.1 kV grade(IS:694) of approved make in surface / recessed ISI marked medium duty PVC conduit & it's accessories, Hot Dipped Galvanized M.S Modular box of 20 SWG with earth terminal, 6 A modular switch, 6 A modular socket, Modular plate with grid plate, screws, making connections, testing etc. as required.		
1.3.1	ON Board	P. point	9
1.3.2	Short point (up to 3 mtr.)	P. point	0
1.3.3	Medium point (up to 6 mtr.)	P. point	20
1.3.4	Long point (up to 10 mtr..)	P. point	0
1.4	Supplying and drawing FR PVC insulated & unsheathed flexible copper conductor ISI marked (IS:694) of 1.1 kV grade and approved make in existing surface or recessed conduit/casing capping including making connections etc. as required.		
1.4.1	3x 1.5 sq.mm (For Extra Point Wiring)	Mtr.	931
1.4.2	2 x 2.5 sq. mm. + 1x1.5sqmm (For Light & indoor ac circuit)	Mtr.	3440

1.4.3	2 x 4.0 sq. mm. + 1 x 2.5 sq. mm. (For Power & AC Circuit)	Mtr.	308
1.5	P&F metal clad industrial plug top & socket unit with pin and sleeve type contact on porcelain/ bakelite base in sheet steel enclosure (without MCB) including making connections, testing etc.as required		
1.5.1	Single / Double Pole (Three pin)		
1.5.2	20 A	Each	10
1.5.3	Three / Four pole (Five pin)		
1.5.4	20 A	Each	130
1.6	Supplying and fixing of power plug point Modular accessories on hot dipped galvanized modular box of 18 SWG on surface or in recessed with suitable size of grid plate with cover plate including cost of modular 16 amp. Switch and socket outlet , making connection , testing , etc. as required.	Each	78
1.6.1	P & F following size mounting grid plates with cover plates.		
1.6.2	1-2 Module	Each	25
1.6.3	8 Module	Each	15
1.7	P & F following size hot dip galvanized M.S. box of 20 SWG with earthing terminal in recess/ surface suitable for modular accessories as required.		
1.7.1	1-2 Module	Each	25
1.7.2	8 Module	Each	15
1.8	P & F following modular accessories made out of unbreakable and fire retardant poly carbonate with silver contacts including making connections testing etc. as required		
1.8.1	RJ-11 telephone jack Single two line	Each	10
1.8.2	RJ-45 computer jack with shutter	Each	15
1.8.3	5 step fan regulator 2 Module	Each	83
1.8.4	Blanking plate	Each	40
1.9	S&F following sizes (dia.) of ISI marked medium duty PVC conduit along with accessories in surface / recessed using saddles, clamps, fastener as required including cutting the wall and making good the same as required.		
1.9.1	25 mm For light & power circuits	R. mtr.	1075
1.9.2	32 mm For Main Db's To Shaft	R. mtr.	270
	DISTRIBUTION BOARDS		
2.1	P&F 240/415 V AC MCB with positive isolation of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections, testing etc. as required.		
2.1.1	Single pole MCB		
2.1.2	6 A to 32 A rating	Each	250
2.1.3	Double pole MCB		
2.1.4	40 A rating	Each	4
2.1.5	63 A rating	Each	0

2.1.6	Four pole MCB		
2.1.7	40 A rating	Each	3
2.1.8	63 A rating	Each	5
2.2	P&F Recessed/ Surface mounting heavy duty horizontal type prewired sheet steel Distribution board phophatised / powder painted complete with suitable rating insulated copper bus bar, shorting link , neutral link, earth link and din bar,masking sheet, loose wire box, terminal block , duly prewired with suitable size FR PVC insulated copper conductor up to terminal blocks conforming to IS:13032 & IS:8623 including making internal DB terminations with copper lugs , testing etc. as required.		
2.2.1	Double door (single phase)		
2.2.2	12 WAY SPN	Each	4
2.2.3	Double door (Three phase)		
2.2.4	6 Way TPN	Each	3
2.2.5	8 Way TPN	Each	2
2.2.6	12 Way TPN	Each	3
	LT CABLES & TERMINATION		
3.1	P/Laying P.V.C./ XLPE insulated & P.V.C. sheathed cable of 1.1 KV grade with Aluminium conductor of IS:1554 P-I / IS :7098 P - I of Group 1 of approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand,IInd class bricks covering, refilling earth,compaction of earth, making necessary connection, testing etc. as required of size.		
3.1.1	3.0C X 240.0 Sq.mm (ARM.)	Mtr.	90
3.1.2	3.0C X 6.0 Sq.mm (ARM.)	Mtr.	90
3.1.3	3.0C X 4.0 Sq.mm (ARM.)	Mtr.	180
3.1.4	3.5C X 300.0 Sq.mm (ARM.)	Mtr.	2820
3.1.5	3.5C X 240.0 Sq.mm (ARM.)	Mtr.	210
3.1.6	3.5C X 185.0 Sq.mm (ARM.)	Mtr.	520
3.1.7	3.5C X 150.0 Sq.mm (ARM.)	Mtr.	50
3.1.8	4.0C X 25.0 Sq.mm (ARM.)	Mtr.	90
3.1.9	4.0C X 10.0 Sq.mm (ARM.)	Mtr.	540
3.1.10	4.0C X 10.0 Sq.mm (UNARM.)	Mtr.	330
3.1.11	4.0C X 6.0 Sq.mm (UNARM.)	Mtr.	750
3.2	P/Laying P.V.C. / XLPE insulated & P.V.C. sheathed cable of 1.1 KV grade with Copper conductor of IS:1554 P-I / IS :7098 P - I of Group 1 of approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand,IInd class bricks covering, refilling earth,compaction of earth, making necessary connection, testing etc. as required of size.		
3.2.1	4.0C X 16.0 Sq.mm (ARM.)	Mtr.	1400
3.2.2	4.0C X 10.0 Sq.mm (ARM.)	Mtr.	450
3.3	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, heavy duty aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.		

3.3.1	3 x 240.0 sq.mm	Set	6
3.3.2	3 x 6.0 sq.mm	Set	6
3.3.3	3 x 4.0 sq.mm	Set	12
3.3.4	3.5 x 300.0 sq.mm	Set	18
3.3.5	3.5 x 240.0 sq.mm	Set	2
3.3.6	3.5 x 185.0 sq.mm	Set	6
3.3.7	3.5 x 150.0 sq.mm	Set	2
3.3.8	4 x 25.0 sq.mm	Set	4
3.3.9	4 x 10.0 sq.mm	Set	14
3.4	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, heavy duty Copper/Bimetallic lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.		
3.4.1	4 x 16.0 sq.mm	Set	112
3.4.2	4 x 10.0 sq.mm	Set	30
3.5	Supplying and making end termination with heavy aluminium lugs (Pin / ring type) duly crimped with crimping tool, PVC tape etc of following size.		
3.5.1	10.0 Sq.mm	Each	72
3.5.2	6.0 Sq.mm	Each	152
3.6	P/Laying ISI marked P.V.C. insulated submersible cable confirming to IS:694 with flexible copper conductor including making connection etc. as required.		
3.6.1	6.0 Sq.mm 3 core flat / Round	Mtr.	150
3.7	Supply, Fabricating & installing following sizes of powder coated perforated M.S. cable trays including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling with M.S. suspenders, fastners, supports etc. as required.		
3.7.1	300mm x 62.5mm x 2.0mm	Mtr.	60
3.7.2	450mm x 62.5mm x 2.0mm	Mtr.	130
3.7.3	600mm x 62.5mm x 2.0mm	Mtr.	75
3.8	P / L of Double wall corrugated HDPE pipe confirming to IS : 14930 P - 1 & 2 with HDPE Coupler at 1 mtr. Depth below the ground for laying cable including making the trench and back filling , compaction of earth as required of Gemini or IS:14930 marked make. Outer Dia. / Inner dia		
3.8.1	110 / 95 mm	Mtr.	130
3.8.2	160 / 136 mm	Mtr.	110
3.8.3	200 / 175 mm	Mtr.	30
3.9	S/F cable route marker with 10cm x 10cm x 5mm thick or of 10cm dia. G.I.plate with inscription thereon, bolted/welded to 35mm x 35mm x 6mm angle iron,60cm long and fixing the same in ground as required.	Each	20
	EARTHING		
	Maintenance free Gel Earthing with Pipe in pipe / Pipe in strip technology filled with anti corrosive conductive compound (CPRI Tested		

4.1	) below the ground in 150 - 200 mm dia. earth pit & surrounding filled with required mineral filling compound (MFC should have hygroscopic property to retain the moisture for long time to create low resistance zone) and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size 300mm x 300mm complete testing of earth resistance as required. of following sizes.		
	With Pipe in Pipe Technology (Inner pipe dia. / Outer pipe dia.) 80 - 100 micron GI Coating		
4.1.1	GI pipe 2000 mm long, 50 / 25mm, Terminal 40mm X 6 mm GI Strip	Set	28
4.1.2	GI pipe 3000 mm long, 80 / 50 mm, Terminal 50mm X 6 mm GI Strip	Set	4
4.2	S & Laying following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.		
4.2.1	8 SWG G.I. (Hot Dipped) Wire	Mtr.	380
4.2.2	25mm x 3mm G.I. (Hot Dipped) Strip	Mtr.	560
4.2.3	50mm x 6mm copper strip	Mtr.	60
	FAN & LIGHTINGS		
5.1	P & F double ball bearing capacitor start, aluminium body & blade ceiling fan with down rod up to 30 cm with 3 x 1.5 sq.mm pvc insulated flexible copper conductor making connection testing etc. as required.		
5.1.1	1200 mm sweep	Each	83
5.2	P&F of Heavy duty capacitor start, Double ball bearing 900/1400 RPM single phase ISI marked Exhaust fan,IS:2312 marked in existing opening including making connections testing etc. as required.		
5.2.1	300 mm sweep(900/1400 RPM)	Each	10
5.3	P & F of IP 20 LED tube light 18/20 watt with external batten made from polycarbonare/ extruded aluminium powder coatedhousing with in built driver, 2000 luman + 5% tolerarrce system luman efficiacy of 100 Lm/ watt minimum expected life time of 50000 burning hours, CCT 3000k/4000k / 5700K /6000K / 6500K ANSI, CRI 80, driver efficiency >85%, PF 0,95 at full load/ 230 volt AC.		
5.3.1	Polycarbonate Base	Each	183
5.4	P & F of IP40 LED Recessed / Surface Mounted, Round / Sqaure Non- Dimmable Downlight with dle cast aluminum housing & Heat Sink for heat dissipation, high purity reflector with external BIS certified 2.5 KV surge protected driver having efficiency > 85% and in compliance to IEC standards. System Lumen efficacy of ~ 100 1m / watt and life time of minimum 50000 Burning Hours with 70% of intial Lumen maintaned, CCT 30000K / 40000K / 60000K , maximum power consumption should not more than the specified rating and Fixture shall be of CEcompliance.		
5.4.1	LEDDownlight 18/20 Watt	Each	95
	DATA NETWORKING		
6.1	Supply , Drawing and Testing of 4 pair, 24 AWG UTP Cat 6 Cable as per latest ammendments of TIA /EIA 568 B.2-1 Specifications in existing MS/PVC Conduits including making connections to Information outlets and Patch Panels with ferruling at both ends for identification with necessary tools for punching, stripping, crimping and testing required	Mtr.	450
	Supply , Installation, Testing and Comissioning of Rack mounted 19", Cat 6 UTP,1.5-1.6		

6.2	MM CRS chasis , powder coated Modular Patch Panels with collapsible shutters on jacks to support latest ammendments of TIA / EIA Cat 6 Specifications in Existing Communication Rack along with necessary connections of Cat 6 UTP Cables, With Rear Cable management trays and clamps.		
6.2.1	6 Ports	Each	1
6.2.2	24 Ports	Each	1
6.3	Supply , Installation and Testing of 4 pair , 100 Ohm, 24 AWG , Cat 6 UTP, flexible , Double ended Patch Cords along with 2 No of RJ 45 connectors with strain relief transparent boots as per TIA /EIA 568 B.2-1 Specifications.		
6.3.1	1 Mtr/3 ft	Each	32
6.4	Supply , Installation, Testing and Comissioning of Wall mounted Communication rack with glass doors, handles ,lock , Top and Bottom Cable entries, Supports for mounting rack on wall , Cable managers, one Fan, Equipment mounting hardware, power supply box for supplying power to switches, fans etc along with earth continuity kit, Mcb, indicator, moulded power supply cable		
6.4.1	6 U(44 mm) wall mounted	Each	1
6.4.2	9 U(44 mm) wall mounted	Each	1
6.5	SITC of 10/100 MBPS Unmanaged Switch		
6.5.1	8 Port	Each	1
6.5.2	24 Port	Each	1
	TELEPHONE & EPABX SYSTEM		
7.1	Supplying and drawing PVC/ Polythene insulated and PVC sheathed unarmoured/ armoured telephone cable with 0.5 mm dia. Tinned / annealed copper conductor taped &confirming to ITD specification S/WS 113C of approved make in existing surface or recessed conduit/casing capping.		
	2 pair	Mtr.	150
7.2	Jelly filled armoured (PIJF) Armoured telephone cable including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand,IInd class bricks covering, refilling earth,compaction of earth, making necessary connection, testing etc. as required of size.		
7.2.1	20 pair	Mtr.	80
7.3	P & F Krone module with base frame in the recess / surface made out of 16 SWG sheet steel box, front openable, having locking arrangements duly powder painted.,including dressing, ferruling and punching of telephone cable with krone tool etc. as required.		
7.3.1	20 Pairs	Each	2
	MAIN LT DISTRIBUTION PANEL		
1	SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in grey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment/switchgear . Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0 mm thick sheet supported by base M.S. channel if required . Side walls and cable alley compartments having bolted type doors with detachable extension type structure. (only outer area on all sides shall be measured)		

	Powder Coated/ Epoxy/ PU painted with phosphatisation	Sq mtr	40
2	Supplying and fixing of Aluminium / Copper bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.		
2.1	Electrolytic grade Aluminium bus bar 6010 grade	KG.	40
3	S & F of (0-500) Volts Range Voltmeter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
3.1	Digital type	Each	3
4	S & F of CT operated Direct Reading type Ampere meter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
4.1	Digital type confirming to IEC 62053-21		
4.2	Below 500 A	Each	3
4.3	Above 500 A	Each	2
5	SF of Current Transformer , with all necessary supportin existing panel including connection etc. as required .		
5.1	from 1600 / 5 to 2000 /5 Ratio , 15 VA, class 0.5 accuracy	Each	9
5.2	from 400 / 5 to 1200/5 Ratio , 15 VA , class 0.5 accuracy	Each	9
6	S & F Selector Switch for Voltmeter (4 Position) including Making Connection Etc. as required	Each	3
7	S & F of CT linked Selector Switch of 10 A for Ampere meter (4 Position) including Making Connection Etc. as required	Each	4
8	SF of 240/220 V, LED (22.5 mm dia) Pilot lamp with integral circuit, terminal block, including connection etc. as required.		
8.1	Red/yellow/Green colour	Each	8
8.2	Blue colour	Each	4
9	SITC of Fixed / Draw out type 4 pole Air Circuit Breaker conforming to IS 60947 P - 2 in existing LT panel suitable for LT installation 440 V, 50 Hz and having adjustable over load short-circuit, earth fault and microprocessor based release with separate LED indication for each type of fault ,LCD display , Thermal memory at least 4NO & 4NC auxiliary contacts safety shutter and fault position acknowledgement mechanism . type ACB shall have separate indication for service, test, isolation, maintenance position, Breaking capacity Icu = Ics = Icw (1 sec), Uimp - 12 KV, including making connections etc. as required.		
9.1	Draw out type (Motorised charging type)		
9.2	2000 A Rating ,50 / 65 kA	Each	1

9.3	1600 A Rating ,50 / 65kA	Each	1
9.4	800 A Rating , 50kA	Each	1
10	SITC of Fixed / Draw out type 3 pole Air Circuit Breaker conforming to IS 60947 P - 2 in existing LT panel suitable for LT installation 440 V, 50 Hz and having adjustable over load short-circuit, earth fault and microprocessor based release with separate LED indication for each type of fault ,LCD display , Thermal memory at least 4NO & 4NC auxiliary contacts safety shutter and fault position acknowledgement mechanism . type ACB shall have separate indication for service, test, isolation, maintenance position, Breaking capacity Icu = Ics = Icw (1 sec) , Uimp - 12 KV, including making connections etc. as required.		
10.1	Draw out type (Manual Spring charged)		
10.2	1000 A Rating , 50kA	Each	1
11	Supply and fixing of following accessories for Air circuit breakers.		
11.1	Shunt Trip Release	Each	3
11.2	Under Voltage Release	Each	3
11.3	Earth Fault Release	Each	3
11.4	Mechanical Interlocking kit	Each	3
2	SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 60947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders, etc. as required.		
12.1	With Thermal Magnetic release		
12.2	up to 100 Amp , 25 kA, adjustable O/L & fixed S/C setting, Ics = 100 % Icu	Each	5
12.3	200 Amp , 35kA, adjustable O/L & fixed S/C setting, Ics = 100 % Icu	Each	1
12.4	With Microprocessor based release		
12.5	250 Amp , 35 kA, adjustable O/L & Adjustable S/C setting, Ics = 100 % Icu	Each	1
12.6	400 Amp ,35 kA, adjustable O/L & adjustable S/C setting, Ics = 100 % Icu	Each	1
12.7	630 Amp ,35 kA, adjustable O/L & adjustable S/C setting, Ics = 100 % Icu	Each	1
13	Supply and fixing of following accessories for MCCB		
13.1	Shunt Trip Release	Each	18
13.2	Under Voltage Release	Each	18
13.3	Earth Fault Release	Each	18
	TERRACE FLOOR VRV PANEL-1		
	SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in grey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment/switchgear . Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0		

1	mm thick sheet supported by base M.S. channel if required . Side walls and cable alley compartments having bolted type doors with detachable extension type structure. (only outer area on all sides shall be measured)		
	Powder Coated/ Epoxy/ PU painted with phosphatisation	Sq mtr	30
2	Supplying and fixing of Aluminium / Copper bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.		
2.1	Electrolytic grade Aluminium bus bar 6010 grade	KG.	20
3	S & F of (0-500) Volts Range Voltmeter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
3.1	Digital type	Each	1
4	S & F of CT operated Direct Reading type Ampere meter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
4.1	Digital type confirming to IEC 62053-21		
4.2	Below 500 A	Each	1
5	SF of Current Transformer , with all necessary support in existing panel including connection etc. as required .		
5.1	from 400 / 5 to 1200/5 Ratio , 15 VA , class 0.5 accuracy	Each	3
6	S & F Selector Switch for Voltmeter (4 Position) including Making Connection Etc. as required	Each	1
7	S & F of CT linked Selector Switch of 10 A for Ampere meter (4 Position) including Making Connection Etc. as required	Each	1
8	SF of 240/220 V, LED (22.5 mm dia) Pilot lamp with integral circuit, terminal block, including connection etc. as required.		
8.1	Red/yellow/Green colour	Each	2
8.2	Blue colour	Each	1
9	SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 60947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders, etc. as required.		
9.1	With Microprocessor based release		
9.2	400 Amp ,35 kA, adjustable O/L & adjustable S/C setting, Ics = 100 % Icu	Each	1
10	Supply and fixing of following accessories for MCCB		
10.1	Shunt Trip Release	Each	1
10.2	Under Voltage Release	Each	1
10.3	Earth Fault Release	Each	1

11	P&F 240/415 V MCB of breaking capacity not less than 10 KA (C tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required		
11.1	Four pole MCB		
11.2	6 A to 32 A rating	Each	4
12	P&F of RCBO with overload, short-circuit and earth leakage protection ISI marked (IS12640)/ conforming to IEC 61009/1 complete in all respect including making connections, testing etc. as required.		
12.1	Four pole 100/300 mA sensitivity		
12.2	40 A rating	Each	3
12.3	63 A rating	Each	8
	TERRACE FLOOR VRV PANEL-2		
1	SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in grey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment/switchgear . Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0 mm thick sheet supported by base M.S. channel if required . Side walls and cable alley compartments having bolted type doors with detachable extension type structure. (only outer area on all sides shall be measured)		
	Powder Coated/ Epoxy/ PU painted with phosphatisation	Sq mtr	30
2	Supplying and fixing of Aluminium / Copper bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.		
2.1	Electrolytic grade Aluminium bus bar 6010 grade	KG.	20
3	S & F of (0-500) Volts Range Voltmeter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
3.1	Digital type	Each	1
4	S & F of CT operated Direct Reading type Ampere meter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
4.1	Digital type confirming toIEC 62053-21		
4.2	Above 500 A	Each	1
5	SF of Current Transformer , with all necessary support in existing panel including connection etc. as required .		
5.1	from 400 / 5 to 1200/5 Ratio , 15 VA , class 0.5 accuracy	Each	3
	S & F Selector Switch for Voltmeter (4 Position) including Making Connection Etc. as		

6	required	Each	1
7	S & F of CT linked Selector Switch of 10 A for Ampere meter (4 Position) including Making Connection Etc. as required	Each	1
8	SF of 240/220 V, LED (22.5 mm dia) Pilot lamp with integral circuit, terminal block, including connection etc. as required.		
8.1	Red/yellow/Green colour	Each	2
8.2	Blue colour	Each	1
9	SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 60947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders, etc. as required.		
9.1	With Microprocessor based release		
9.2	630 Amp ,35 kA, adjustable O/L & adjustable S/C setting, Ics = 100 % Icu	Each	1
10	Supply and fixing of following accessories for MCCB		
10.1	Shunt Trip Release	Each	1
10.2	Under Voltage Release	Each	1
10.3	Earth Fault Release	Each	1
11	P&F 240/415 V MCB of breaking capacity not less than 10 KA (C tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required		
11.1	Four pole MCB		
11.2	6 A to 32 A rating	Each	5
12	P&F of RCBO with overload, short-circuit and earth leakage protection ISI marked (IS12640)/ conforming to IEC 61009/1 complete in all respect including making connections, testing etc. as required.		
12.1	Four pole 100/300 mA sensitivity		
12.2	40 A rating	Each	6
12.3	63 A rating	Each	16
	TERRACE FLOOR VRV PANEL-3		
	SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in grey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment/switchgear . Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0 mm thick sheet supported by base M.S. channel if required . Side walls and cable alley compartments having bolted type doors with detachable extension type structure. (only outer area on all sides shall be		

1	measured)		
	Powder Coated/ Epoxy/ PU painted with phosphatisation	Sq mtr	35
2	Supplying and fixing of Aluminium / Copper bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.		
2.1	Electrolytic grade Aluminium bus bar 6010 grade	KG.	25
3	S & F of (0-500) Volts Range Voltmeter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
3.1	Digital type	Each	1
4	S & F of CT operated Direct Reading type Ampere meter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
4.1	Digital type confirming to IEC 62053-21		
4.2	Above 500 A	Each	1
5	SF of Current Transformer , with all necessary support in existing panel including connection etc. as required .		
5.1	from 400 / 5 to 1200/5 Ratio , 15 VA , class 0.5 accuracy	Each	3
6	S & F Selector Switch for Voltmeter (4 Position) including Making Connection Etc. as required	Each	1
7	S & F of CT linked Selector Switch of 10 A for Ampere meter (4 Position) including Making Connection Etc. as required	Each	1
8	SF of 240/220 V, LED (22.5 mm dia) Pilot lamp with integral circuit, terminal block, including connection etc. as required.		
8.1	Red/yellow/Green colour	Each	2
8.2	Blue colour	Each	1
9	SITC of Fixed / Draw out type 4 pole Air Circuit Breaker conforming to IS 60947 P - 2 in existing LT panel suitable for LT installation 440 V, 50 Hz and having adjustable over load short-circuit, earth fault and microprocessor based release with separate LED indication for each type of fault ,LCD display , Thermal memory at least 4NO & 4NC auxiliary contacts safety shutter and fault position acknowledgement mechanism . type ACB shall have separate indication for service, test, isolation, maintenance position, Breaking capacity Icu = Ics = Icw (1 sec), Uimp - 12 KV, including making connections etc. as required.		
9.1	Draw out type (Motorised charging type)		
9.3	1600 A Rating ,50 / 65kA	Each	1
10	Supply and fixing of following accessories for Air circuit breakers.		
10.1	Shunt Trip Release	Each	1

10.2	Under Voltage Release	Each	1
10.3	Earth Fault Release	Each	1
10.4	Mechanical Interlocking kit	Each	1
11	P&F 240/415 V MCB of breaking capacity not less than 10 KA (D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required		
11.1	Four pole MCB		
11.2	6 A to 32 A rating	Each	6
12	P&F of RCBO with overload, short-circuit and earth leakage protection ISI marked (IS12640)/ conforming to IEC 61009/1 complete in all respect including making connections, testing etc. as required.		
12.1	Four pole 100/300 mA sensitivity		
12.2	40 A rating	Each	6
12.3	63 A rating	Each	32
	M. BUILDING PANEL		
1	SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in grey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment/switchgear . Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0 mm thick sheet supported by base M.S. channel if required . Side walls and cable alley compartments having bolted type doors with detachable extension type structure. (only outer area on all sides shall be measured)		
	Powder Coated/ Epoxy/ PU painted with phosphatisation	Sq mtr	30
2	Supplying and fixing of Aluminium / Copper bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.		
2.1	Electrolytic grade Aluminium bus bar 6010 grade	KG.	20
3	S & F of (0-500) Volts Range Voltmeter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
3.1	Digital type	Each	1
4	S & F of CT operated Direct Reading type Ampere meter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
4.1	Digital type confirming to IEC 62053-21		
4.2	Above 500 A	Each	1
5	SF of Current Transformer , with all necessary support in existing panel including connection etc. as required .		

5.1	from 400 / 5 to 1200/5 Ratio , 15 VA , class 0.5 accuracy	Each	3
6	S & F Selector Switch for Voltmeter (4 Position) including Making Connection Etc. as required	Each	1
7	S & F of CT linked Selector Switch of 10 A for Ampere meter (4 Position) including Making Connection Etc. as required	Each	1
8	SF of 240/220 V, LED (22.5 mm dia) Pilot lamp with integral circuit, terminal block, including connection etc. as required.		
8.1	Red/yellow/Green colour	Each	2
8.2	Blue colour	Each	1
9	SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 60947-2 / IEC 60947-2 with front face and centralised adjustable, line load provision for UVR , shunt trip ,earth fault trip, push test) to trip , including making connections with lugs / spreaders, etc. as required. spreaders, etc. as required.		
12.1	With Thermal Magnetic release		
12.2	up to 100 Amp , 25 kA, adjustable O/L & fixed S/C setting, Ics = 100 % Icu	Each	4
9.1	With Microprocessor based release		
9.2	250 Amp , 35 kA, adjustable O/L & Adjustable S/C setting, Ics = 100 % Icu	Each	1
10.00	Supply and fixing of following accessories for MCCB		
10.1	Shunt Trip Release	Each	4
10.2	Under Voltage Release	Each	4
10.3	Earth Fault module	Each	4
11	P&F 240/415 V MCB of breaking capacity not less than 10 KA (C tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required		
11.1	Four pole MCB		
11.2	6 A to 32 A rating	Each	12
11.3	40 A rating	Each	3
11.4	50-63A rating	Each	6
	WATER PANEL		

1	SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in grey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment/switchgear . Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0 mm thick sheet supported by base M.S. channel if required . Side walls and cable alley compartments having bolted type doors		
	Powder Coated/ Epoxy/ PU painted with phosphatisation	Sq mtr	10
2	Supplying and fixing of Aluminium / Copper bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.		
2.1	Electrolytic grade Aluminium bus bar 6010 grade	KG.	5
3	S & F of (0-500) Volts Range Voltmeter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
3.1	Digital type	Each	1
4	S & F of CT operated Direct Reading type Ampere meter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
4.1	Digital type confirming to IEC 62053-21		
4.2	Above 500 A	Each	1
5	SF of Current Transformer , with all necessary support in existing panel including connection etc. as required .		
5.1	up to 150 / 5 Ratio , 5 VA , class 1 accuracy	Each	3
6	S & F Selector Switch for Voltmeter (4 Position) including Making Connection Etc. as required	Each	1
7	S & F of CT linked Selector Switch of 10 A for Ampere meter (4 Position) including Making Connection Etc. as required	Each	1
8	SF of 240/220 V, LED (22.5 mm dia) Pilot lamp with integral circuit, terminal block, including connection etc. as required.		
8.1	Red/yellow/Green colour	Each	2
8.2	Blue colour	Each	1
9	SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 60947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders, etc. as required.		
9.1	With Thermal Magnetic release		
10	up to 100 Amp , 16 kA, adjustable O/L & fixed S/C setting, Ics = 100 % Icu	Each	1
10.1	Supply and fixing of following accessories for MCCB		
10.2	Shunt Trip Release	Each	1

10.3	Under Voltage Release	Each	1
10.4	Earth Fault Release	Each	1
11	P&F 240/415 V MCB of breaking capacity not less than 10 KA (D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required		
11.1	Triple pole MCB		
11.2	6 A to 32 A rating	Each	11
	APFC PANEL		
1	SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in grey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment/switchgear . Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0 mm thick sheet		
	Powder Coated/ Epoxy/ PU painted with phosphatisation	Sq mtr	20
2	Supplying and fixing of Aluminium / Copper bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.		
2.1	Electrolytic grade Aluminium bus bar 6010 grade	KG.	15
3	S & F of (0-500) Volts Range Voltmeter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
3.1	Digital type	Each	1
4	S & F of CT operated Direct Reading type Ampere meter on existing panel, making connections by PVC insulted copper condutor with PVC sleeves / Channel etc. as required		
4.1	Digital type confirming to IEC 62053-21		
4.2	Above 500 A	Each	1
5	S & F of Current Transformer , with all necessary support in existing panel including connection etc. as required .		
5.1	from 400 / 5 to 1200/5 Ratio , 15 VA , class 1 accuracy	Each	3
6	S & F Selector Switch for Voltmeter (4 Position) including Making Connection Etc. as required	Each	1
7	S & F of CT linked Selector Switch of 10 A for Ampere meter (4 Position) including Making Connection Etc. as required	Each	1
8	SF of 240/220 V, LED (22.5 mm dia) Pilot lamp with integral circuit, terminal block, including connection etc. as required.		
8.1	Red/yellow/Green colour	Each	26
8.2	Blue colour	Each	1
	SITC of Fixed / Draw out type 3 pole Air Circuit Breaker conforming to IS 60947 P - 2 in existing LT panel suitable for LT installation 440 V, 50 Hz and having adjustable over load short-circuit, earth fault and microprocessor based release with separate LED		

9	indication for each type of fault ,LCD display , Thermal memory at least 4NO & 4NC auxiliary contacts safety shutter and fault position acknowledgement mechanism . type ACB shall have separate indication for service, test,		
9.1	Draw out Type (Manual spring charged)		
9.2	1000 A Rating , 50kA	Each	1
10	Supply and fixing of following accessories for Air circuit breakers.		
10.1	Shunt Trip Release	Each	1
10.2	Under Voltage Release	Each	1
10.3	Earth Fault Release	Each	1
10.4	Mechanical Interlocking kit	Each	1
11	SITC of quick make and quick break 3 pole current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 60947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip , earth fault trip, push (test) to trip, including making connections with lugs &spreaders, etc. as required.		
11.1	up to 125 Amp , 25 kA, adjustable O/L & fixed S/C setting, Ics = 100 % Icu	Each	3
12	P&F 240/415 V MCB of breaking capacity not less than 10 KA (D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required		
12.1	Triple pole MCB		
12.2	6 A to 32 A rating	Each	3
12.3	50 / 63 A rating	Each	10
13	SITC of self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnector (PSD) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR . including making connections with suitable capacity conductors/cables testing etc. as required.		
13.1	Heavy duty Three phase 480 V , 50 Hz capacitor (Bank)	kVAR	400
14	SITC of microprocessor based three phase sensing power factor correction relay having following sensing capacity secondary current , self analysing auto c/k setting according to targeted power factor setting, the relay shall have digit display unit for display of real power factor, targeted power factor, lag/lead capacitor switching status, alarm output for under current, over current, insufficient compensation, indication of switching on units, auto/manual status, and shall have over load protection, no volt release , having multi parameter like KW, KVA, KVAR, metering facility as required.		
14.1	12 to 14 stage sensitivity up to 50 milli Amp	Each	1
15	P & F of 440 Volt 3 pole capacitor (AC 6 B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/ reactors to limit the inrush current , conforming to IS:13947-4-1/IEC:947-4-1, Din rail mounting type including making connections, testing etc. as required. suitable for following capacity capacitor bank.		
15.1	8.5 KVAR	Each	2
15.2	12.5 KVAR	Each	1
15.3	20 KVAR	Each	4
15.4	25 KVAR	Each	6

15.5	50 KVAR	Each	3
16	P & F push button actuators and integral contact block of dia. 22.5 mm including making connection etc. as required.		
16.1	Luminous type Red , Yellow, Green, Amber	Each	32
	HT CABLES		
1	P & Laying XLPE insulated IS:7098/II/85 of Group1 and approved make H.T.cable for working voltage 11 K.V.Earthed direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, IInd class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size.		
1.1	3 core 185.0 Sq.mm	Mtr.	150
2	Providing & making heat shrinkable type indoor/outdoor/straight through terminations/joint kit of Group1 and approved make suitable for XLPE insulated 11 KV cable, with required components, prepration of cable ends,testing etc. as required of following sizes .		
2.1	3 core 120/150/185 Sq.mm INDOOR TYPE	EACH	5
2.2	3 core 120/150/185 Sq.mm OUTDOOR TYPE	EACH	5
	TRANSFORMER & HT WORK		
1	SITC of star rated Copper wound distribution Transformer of following rating 11/0.433KV Delta- Star Connected, Vector Group Dyn 11, as per BEE star level- 2 & BISapproved with losses as defined as per IS 1180 part I 2014. including standard accessories like conservator, silica gel breather, radiator, fins, HT cable box & LT cableboxes, Off -LTC(+5% to 10% @ 2.5%) winding temperature rise of 50/55 degree C, 151 marked drain valve, Dial type Temperature gauge, first fill of oil, Epoxy based paint, including carrying of pre-commission Testing & Charging of Transformer. (Transformer Should be CTLTested, w/o any extra cost)		
1.1	1250 KVA	Each	1
2	Supply & Installation of D.P. Structure With AIR BREAK SWITCH having following specifications:		
2.1	DP :double pole structure on 2 no ISMB 150 x 100 mm, 10 mtr high using 7 no MS channel each of size 100 mm x 50 mm x 2500 mm complete in all respect with nuts, springs washers, clamps as required.		
2.2	GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3-ø, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 nos pin insulator ,GI pipe of suitable length for operation.		
2.3	DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators		
2.4	LA: 3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv Overhead line with rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required.		
2.5	JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. 6.GENERAL:The go shall be operated by hand operated liver properly earthed with provision for locking mounted at 3’	Set	1
3	SITC of 11 KV, 400/630 A, 20kA / 3 sec, Out door, Extensible / Non Extensible type Ring main unit (RMU) in suitable RCC foundation with 2 no. Load break switch & 1 no. VCB / SF6 circuit breaker with over load, Earth fault, short circuit relay, copper bus bar, ring core protection & metering CT, earthing switch, mechanical ON / OFF / Earth indication, Voltage presence indicator, Digital Multi function meter, Shunt trip coil, Anti reflex operating handle, right angle boots etc. as required.		

		Set	1
4	Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following: (i)Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii)Provision for fixing of combined CT PT Set (To be supplied by DISCOMs), (iii)TT Block, (iv) 6mm Bakelite sheet on all sides, (V) 3/6 core copper cable for interconnections etc. as required.	Each	1
5	Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level.		
	M15 grade Nominal Mix 1: 2: 4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40mm nominal size)	Cum	11.00
6	Random Rubble stone masonry for with hard stone in foundation and plinth in Cement Sand mortar above 30 CM thick wall in:		
6.1	Dry Masonry.	Cum.	5.00
6.2	Cement Mortar 1:6 (1-Cement : 6-Sand).	Cum.	5.00
7	M10 grade Nominal Mix 1: 3: 6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size).	Cum.	5.00
8	M15 grade Nominal Mix 1: 2: 4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40mm nominal size).	Cum.	5.00
9	Plaster on new surface on wall in cement sand mortar 1:3 including racking of joints etc. complete fine finish :		
9.1	25 mm thick	Sqm.	5.00
9.2	20mm thick	Sqm	5.00
9.3	12mm thick	Sqm	5.00
10	Finishing wall with water proofing cement paint of approved brand and manufacture and or required shade to give an even shade including all scaffolding:		
10.1	New work (Two or more coats applied @ 3.84 kg/10 sqm).	Sqm	20.00
11	Supplying and fixing welded mesh/ expanded metal mesh in frame work , flat iron beading with angle iron posts 50x50x6mm placed at every 3 Mtr. apart 30cm in ground embedded in cement concrete 1:3:6 (30x30x45cm) corner and every tenth post to be strutted with (50 x 50 x 6cm) angle iron provided and fixed and fitted with posts including earth work in excavation etc. complete.		
11.1	Welding mesh 25mm x 25mm x 2.1mm	Sqm.	10.00
	LIFTS WORK		
1	Supplying , installation , Testing and commissioning of the passenger/goods/Stretcher or Bed elevator having following main features:		
	(a) MOTOR : Gearless lift drive comprising of high starting torque lift duty, 3 phase 440 Volts A.C. permanent magnetic synchronous motor of proper rating with high efficiency shall be used.		
	(b) Operation / Drive : Microcessor based /PLC, AC Variable Voltage variable frequency variable speed (V3F) vector control drive with encoder feedback closed loop system shall be used for lift car and door operation which shall be full collective selective operation hall call demand response, UP/Down hall stops, main, Up/Down contactor		

	with overload and phase reversal relay and safety controls .		
	(c) Traction Media: main hoist flat coated steel belt / rope . Thimbles of spring permit adjustment of uniform tension for smooth operation of the elevator Pulse belt monitoring system to avoid the cut in the belt.		
	(d) Car : car should be with M S platform with bracings of adquate size and to sustain the impact load cabin plus passengers with safety factor of fire for steel withAnti skid PVC flooring and side panels should be of Stainless steel with hair line finish of sheet of grade 304 duty with S.S. handrails . Car ceiling shall be steel finish with aesthetic appearances with LED ceiling lights .The size of the car shall be taken as per available lift well size and relevant BIS code of lifts. Car panel will also be of S S 304 grade finished with emergency stop device, emergency alarm, mechanical door safety device ,full length infra-red curtain in car door , facility of auto/attended mode. All car panel buttons and all floor switches must be with brail language as per lift act. Agency shall also provide & install one No. 2 MP, lR, lP based ceiling mounted Dome Camerain the car complete with connecting cables & accessories (To be connected with existing CCTV system in the Building) .The inspection unit shall be provided at the top of the car.		
	(e) Landing Doors : All landing door shall be fully automatic centre opening / telescopic made of hair line finish stainless steel grade 304 with key holes and infrared curtains with unlocking facility from outside.		
	(f) Emergency light: Appropriate rechargeable battery operated LED emergency light in the car and along with alarm switch shall be provided.		
	(g) ARD: Automatic rescue Device (ARD) shall be provided according to passenger capacity with SMF batteries of approved brands as per BSR.		
	(h) Audio-Visual lndication : Audio visual indication in the lift car, showing over loading such that doors kept open till excess load is removed.		
	(i) Scrolling lndicators: Digital scrolling indicator system for up-down arrow with floor position indicator shall be provided inside the car and at all stops/floors.		
	(j) Buffers: Spring buffers/PU Buffers shall be provided.		
	(k) Car Fan : ENERGY EFFICIENT Car fanlblower with automatic sleep timer shall be provided.		
	(l) Voice Annunciator: Voice annunciator with suitable music shall be provided in lift car.		
	(m) Self diagnostics system for operational and safety parameters shall be provided in control panel		
	(n) Mechanical/Electronic over speed governor, door key holes in the floor doors, fireman switch shall be provided .		
	(o) Lift machine hoisting arrangement in the lift machine room, counter balance to promote smooth and economic operation complete with steel guide rails for the car & counter weight, Trap Door, Lifting hooks as required and monkey ladders for lift pit should be provided by the agency along with all other steel structure works, foundations for the machine etc as required.		
	(p) Permanent wiring in lift machine room and in lift well with providing and fixing of electrical distiribution board complete with SP & TP MCB's, proper numbers of light points, with LED fixtures , exhaust fan , 2 nos copper plate /chemical earthing with 8 SWG copper earth wire and plug points shall be provided by the agency. (Power supply of 3 phase 440 V shall be made available by department in lift machine room).		
	(q) All civil work related to installation of lift like finishing, cleaning and levelling of lift pit, white wash of lift well and in machine room		

	shall be done by the lift erecting agency without any extra cost.		
	(r) Granite or marble cladding around all landing door openings shall be in the scope of lift installation agency and additional payment shall be made according to the actual measurement / schedule by the department to the lift agency.		
	(s) Agency has to provide all working drawings and documents to comply latest BIS specifications and make proper liasion services for obtaining all necessary permissions.		
	8 passengers/544 Kg , 3 stops, rated speed adjustable up to 1.0 mtr /sec with 2 years comprehensive maintenance / DLP.		

For Plumbing and Sanitary Works

S.No	Description	Unit	Total Qty.
CP ITEMS			
	W.C.Area		
1	P & F European type white glazed vitreous china 1st quality Double syphonic W.C (IS :2556 Mark) with P or S trap including cutting and making good the wall and floor	Each	26
2	P & F water closet Seat Covers with brass hinges complete :		
	Solid PVC (IS 2548 marked) grade-I White for EWC.	Each	26
3	P & F C.P. lugs for toilet seat cover.	Pair	26
4	Providing & fixing Low Level Flushing Cistern of 10 litres capacity (IS:2556 mark) of approved make with complete fittings, C.I. brackets duly painted, brass ball cock with ball, (IS:1703 mark) complete including cutting and making good the wall:		
	WVC for symphonic EWC.	Each	26
5	P & F Inlet Connection Angle Valves Superior quality, of approved make, for Wash basin, Gyser etc.		
	C.P. Inlet connection 15mm.Brass (IS : 8931 marked)	Each	26
6	Providing and fixing Superior quality CP Brass fittings of approved make as per direction of Engineer-in-charge		
	Two way Bib Cock 15 mm nominal size	Each	26
7	P & F C.P. Health Faucet with 1Mtr. Long Tube & Hook of approved make and heavy as per direction of Enginner-in-Charge	Each	26
8	P & F Grating of approved quality/make:		
	Stainless Steel Sheet size 125mm dia. Heavy Quality of approved make .	Each	26
	Wash Basin Area		
1	P & F WVC Wash basin (Ist quality IS:2556 Mark) of approved make with C.I. brackets duly painted 1 No. 15 mm C.P. Pillar cock (IS:8934 Mark) & 32 mm C.P. brass waste coupling of approved make, P.V.C Waste pipe with PVC nut 32 mm complete including cutting & making good the wall :		
	Size 580 mm x 450 mm	Each	34
2	Providing and fixing Superior quality CP Brass fittings of approved make as per direction of Engineer-in-charge		
	Pillar Cock 15 mm nominal size	Each	34
3	P & F Inlet Connection Angle Valves Superior quality, of approved make, for Wash basin, Gyser etc.		
	C.P. Inlet connection 15mm.Brass (IS : 8931 marked)	Each	34
4	P & F Grating of approved quality/make:		

	Stainless Steel Sheet size 125mm dia. Heavy Quality of approved make .	Each	34
5	P&F Beveled edge mirror of special glass of approved ISI make complete with 6mm thick asbestos cement sheet ground fixed to wooden scrwes & washers.		
	Size 600 x 450mm x 4mm thick	Each	34
	Urinal Area		
1	P & F lst quality WVC Urinal (IS:2556 mark) with 25mm dia G.I. waste pipe, dome waste couplings, concealed iron brackets or screws etc complete.		
	Flat Back (large) or half stall size 610x400x80mm	Each	21
2	P&F Marble Urinal Partition slab both sides polished of approved design cut from marble size 900x600mm.		
	Makrana II quality marble having light spots	Each	16
	P & F C.P. brass Urinal Spreader for Large Urinal of heavy duty of approved make as per direction of Enginner-in-Charge	Each	21
4	P & F Inlet Connection Angle Valves Superior quality, of approved make, for Wash basin, Gyser etc.		
	C.P. Inlet connection 15mm.Brass (IS : 8931 marked)	Each	21
5	P & F Grating of approved quality/make:		
	Stainless Steel Sheet size 125mm dia. Heavy Quality of approved make .	Each	21
WATER SUPPLY NETWORK			
1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. (Concealed work including cutting chases and making good the walls etc.,)		
A	15 mm nominal outer dia pipes	Rm	29
B	20mm nominal outer dia pipes	Rm	146
2	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. (Internal work Exposed on wall)		
A	25 mm nominal outer dia pipes	Rm	50
B	32mm nominal outer dia pipes	Rm	67
C	40 mm nominal outer dia pipes	Rm	63
3	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings, this included jointing of pipes & fittings with one step CPVC solvent cement , trenching refilling & testing of joints complete as per direction of Engineer in Charge. (External work)		
A	40 mm nominal outer dia pipes	Rm	520
B	50 mm nominal outer dia pipes	Rm	800
4	P & F Full-way Valve (IS:778 Mark) or wheel valve of approved make :		

A	Gun Matel 25mm nominal bore.	Each	6
B	Gun Matel 32mm nominal bore.	Each	4
C	Gun Matel 40mm nominal bore.	Each	4
D	Gun Matel 50mm nominal bore.	Each	10
5	P & F Gun-metal Non-return Valve or Check Valve (IS :Make) of approved make, superior quality:		
A	50mm nominal bore.	Each	4
	DRAINAGE WORK		
1	Providing and Fixing Unplasticized Poly Vinyl Chloride (UPVC) SWR Pipes Type B for sciland waste discharge system (IS:13592 : 1992 Marked) of approved quality /make.		
A	75 mm dia	Mtr	32.01
B	110 mm dia	Mtr	277.4
2	Providing and Fixing Unplasticized Poly Vinyl Chloride (UPVC) SWR Pipes fittings type B for sciland waste discharge system (IS:13592 : 1992 Marked) of approved quality /make.		
A	Coupler		
	75mm dia	Each	34.00
	110mm dia	Each	26.00
B	Bend 87.5 Dg.		
	75mm dia	Each	2.00
	110mm dia	Each	3.00
C	Bend 45 Dg.		
	75mm dia	Each	19.00
	110mm dia	Each	16.00
D	Single Y		
	75mm dia	Each	16.00
	110mm dia	Each	16.00
E	Single T		
	75mm dia	Each	10.00
	110mm dia	Each	0.00
	110mm dia (TEE WITH DOOR)	Each	5.00
F	Nahni Trap without Jali 4”		
	110mm dia	Each	33.00
G	Vent Cowel		
	110mm dia	Each	4.00
3	P&F rigid PVC Pipe (IS:4985 mark) class II/ (4 Kg. /Cm2.) approved quality /make including joining the pipe with solvent cement rubber ring and lubricant.		
A	160 mm dia	Each	1150
	P & F Square-mouth gully trap `A` grade (IS 651-1992 :marked) of approved make complete with C.I. grating, frame & Cover masonary chamber in C.M. 1:6, 100mm thick		

4	C.C. 1:5:10 base concrete, 40mm thick C.C.M-15 grade coping, 12mm thick cement plaster in CM 1:3 complete as per approved design & type.		
A	Trap size 150 X 100mm, ferrow cement cover with frame, Internal Chamber size 300 X 300mm.	Each	2
5	Construction of manhole in all type of soil inner size 90 X 60 Cm. 300 mm thick masonry in CM 1:6, 10 Cm. thick cement concrete 1:5:10 in foundation, 20 mm thick inside plaster in CM 1:6, finished with floating neat cement, 50mm thick M-15 grade C.C. flooring, making channels, 80mm thick stone slab covering with 40mm thick M-15 grade C.C. flooring, Cement cover with frame of 450mm dia, earthwork etc. complete as per design including disposal of surplus earth within 50 mtr. lead.		
A	Depth up to 0.5 M	Each	5
6	Construction of Man hole, in all types of soil, inner size 1.5 x 1.2 M, with 450mm thick masonry in CM 1:6, 10 Cm. thick cement concrete 1:5:10 in foundation, 20mm thick inside plaster in CM 1:6, finished with floating neat cement, 50 mm thick M-15 grade C.C. flooring making channels, 80 mm thick stone slab covering with 40 mm thick M-15 grade C.C. flooring, Ferro Cement cover with frame of 450mm dia, earthwork etc. complete including disposal of surplus earth within 50 mtr. lead as per design :		
A	Depth up to 1.5 M	Each	2
7	Construction of chamber in all type of soil with 300 mm thick masonry in CM 1:6 m,10 cm thick C.C. 1:5:10 in foundation, 20mm thick insider plaster in Cm 1:6, finished with floating neat cement, 50mm thick M-15 grade C.C. flooring , earthwork etc. complete as per design including disposal of surplus earth within a lead of 50 mtr.		
A	Inside size 300 X 300 mm depth upto 0.5 M Cement cover with frame.	Each	5
B	Inside size 450 x 450mm depth upto 0.5 M Cement cover with frame	Each	16
C	Inside size 600 x 450mm depth upto 0.5 M Cement cover with frame.	Each	27
8	Construction of Open Surface Drain with 112mm thick brick masonry in CM 1:4,110mm thick base concrete 1:5:10, 37mm thick M-15 grade C.C. flooring ,12mm 1:4 cement plaster on all exposed faces of walls including top surface excavation & disposal of earth complete as per approved design/drawing:		
A	250mm drain,300mm Av. depth	Mtr	100
9	Providing, Laying & Jointing R.C.C. class NP-2 Non-Pressure pipes (IS : 458mark) of approved make with collars, jointed with C.M. 1:2 or having Spigot and socket ends with flexible rubber rings joint including testing of joints etc. complete:		
A	200mm dia Internal	Mtr.	35
B	250mm dia Internal	Mtr.	55

राजस्थान सरकार
नगरीय विकास एवं आवासन विभाग

क्रमांक– प.01(24)नविवि / 1 / 2020 लूज जयपुर, दिनांक:– 20 SEP 2021

आदेश

नगरीय विकास एवं आवासन विभाग के अन्तर्गत विभिन्न विकास कार्यों की निविदाओं में संवेदकों द्वारा बी.एस.आर. दर से कम दर डालने पर अन्तर राशि (AT PAR की दर से जितनी कम है) वर्क परफोरमेंस गारन्टी के रूप में कार्य प्रारम्भ करने से पूर्व ली जाएगी तथा इसे कार्य के सन्तोषजनक रूप से पूर्ण होने के पश्चात दोष निवारण अवधि में कार्य की स्थिति सन्तोषजनक पाए जाने पर, दोषनिवारण अवधि उपरान्त वापस लौटा दिया जावेगा। न्यूनतम दरदाता की बोली नियमानुसार स्वीकृत कर Letter of acceptance (LOA) जारी किया जावेगा एवं बी.एस.आर. दर से कम दर की अन्तर राशि की BG/FDR/NSC प्रस्तुत करने हेतु 14 दिवस का समय दिया जायेगा। अन्तर राशि जमा नहीं कराने पर BID SECURITY की राशि नियमानुसार जब्त कर ली जायें। यदि संवेदक वर्क परफोरमेंस गारन्टी राशि जमा कराने के पश्चात कार्य सन्तोषजनक रूप से पूर्ण नही करता है अथवा दोष निवारण अवधि में कार्य में खराबी होती है तो उसकी वर्क परफोरमेंस गारन्टी की राशि जब्त कर ली जावे एवं अनुबन्धानुसार अन्य कार्यवाही भी संपादित की जावें। यह आदेश तुरन्त प्रभाव से लागू किये जाते है। यह आदेश उन सभी निविदाओं पर लागू होगा जो कि भविष्य में जारी होगी तथा वे निविदाएं जो इस आदेश के जारी होने की दिनांक तक अप्राप्त है, इस सम्बन्ध में निविदा दस्तावेजों में आवश्यक संशोधन तुरन्त संबन्धित उपापन अधिकारी द्वारा किया जावे एवं नवीन सभी निविदाओं में उक्त शर्तों का समावेश किया जाना सुनिश्चित किया जावे।

यह आदेश सक्षम स्तर से अनुमोदित है।

(कुन्जीलाल मीना)
प्रमुख शासन सचिव
नगरीय विकास विभाग

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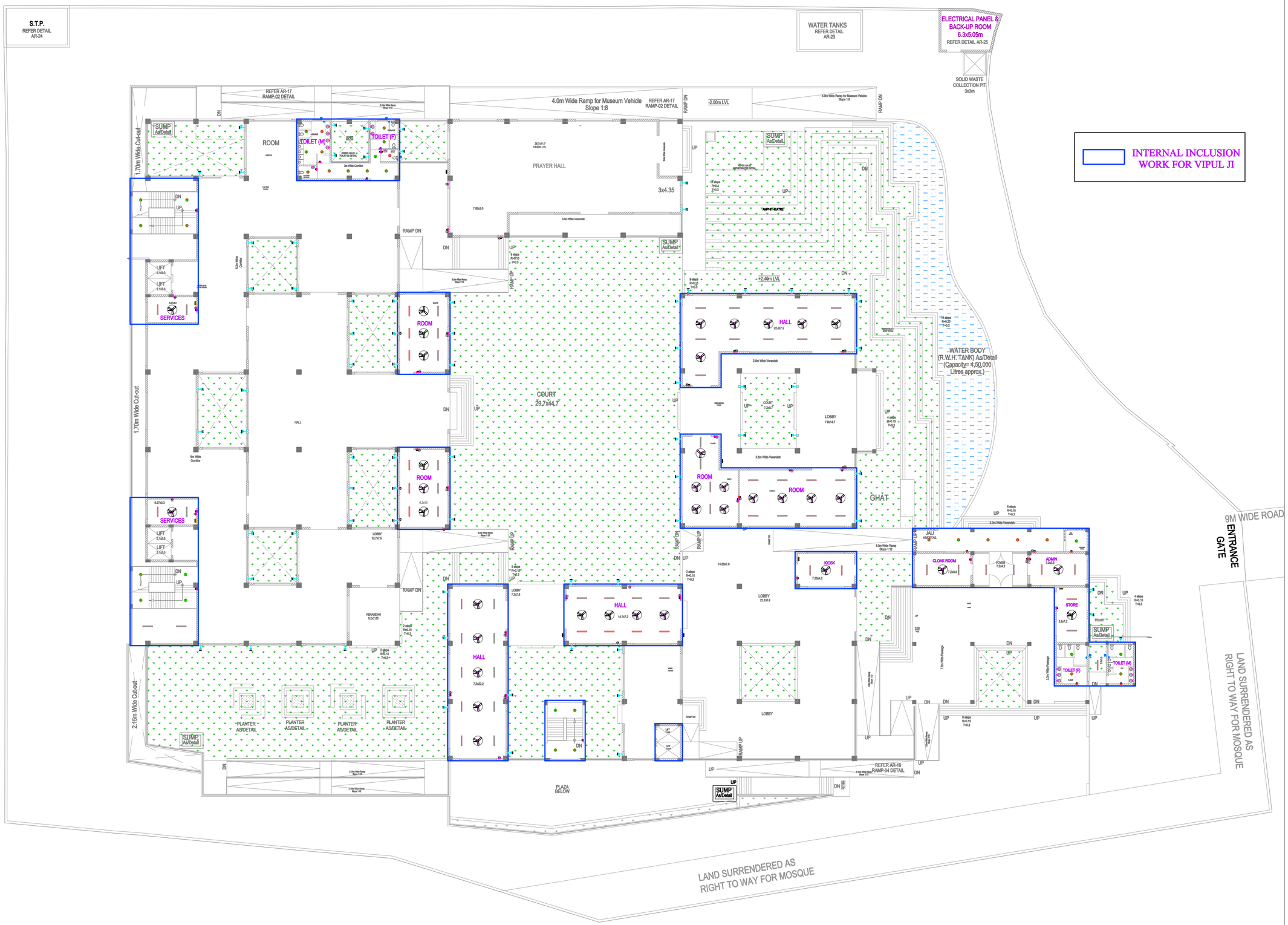

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LEGENDS:

Mounting Height	No.	I D	Symbol	Description
CEILING	36	FAN/48"		CEILING FAN 48"
CEILING	70	TL/C		LED CEILING TUBE LIGHT MAKE:- SYSKA LED CAT NO.:- SSK-T5-20W
WALL	75	lamp		LAMP
+78"	14	ML		12X2 LED MIRROR LIGHT MAKE:- SYSKA LED CAT NO.:- FPL-12X2
CEILING	35	DL		LED 6" DOWN LIGHTER 20W (SURFACE MOUNTED) MAKE:- SYSKA LED CAT NO.:- SDL-15W GLD 6.5K/4K
VENTILATOR HT.	05	CR		CEILING ROSE
VENTILATOR HT.	05	EXF		9" DIA FRESH AIR FAN
+42"	44	SB		SWITCH BOARD
+18"	33	PP		16 A POWER POINT
+60"	08	MCB DB		MCB DISTRIBUTION BOARD

REVISIONS

REMARKS	NO.	DATE	ZONE

DISTRIBUTION OF PRINTS:

ISSUED TO	CLIENT		
Nos.	01		
DATE	15-07-22		
ISSUED TO			
Nos.			
DATE			

PROJECT:

PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:
AMA-GDM- EL-01

TITLE:

UPPER GROUND FLOOR
ELECTRIC POINT MAKRED PLAN

M.E.P. CONSULTANT:

SERVICES CONSULTANT:
VIPUL CONSULTING,
F 9 / 440 , Keshav Marg Chitrakut Scheme,Jaipur
PH:91-0-93146-10438 ,0141-2440946 Mail:vipul8599@yahoo.com

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DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 22-04-2022

NORTH:

INTERNAL INCLUSION WORK FOR VIPUL JI

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LEGENDS:

Mounting Height	No.	I D	Symbol	Description
CEILING	35	FAN/48"		CEILING FAN 48"
CEILING	84	TL/C		LED CEILING TUBE LIGHT MAKE:- SYSKA LED CAT NO.:- SSK-T5-20W
WALL	14	lamp		LAMP
+78"	11	ML		12X2 LED MIRROR LIGHT MAKE:- SYSKA LED CAT NO.- FPL-12X2
CEILING	35	DL		LED 6" DOWN LIGHTER 20W (SURFACE MOUNTED) MAKE:- SYSKA LED CAT NO.:- SDL-15W GLD 6.5K/4K
VENTILATOR HT.	02	CR		CEILING ROSE
VENTILATOR HT.	02	EXF		9" DIA FRESH AIR FAN
+42"	42	SB		SWITCH BOARD
+18"	35	PP		16 A POWER POINT
+60"	05	MCB DB		MCB DISTRIBUTION BOARD

REVISIONS

REMARKS	NO.	DATE	ZONE

DISTRIBUTION OF PRINTS:

ISSUED TO	CLIENT		
Nos.	01		
DATE	15-07-22		
ISSUED TO			
Nos.			
DATE			

PROJECT:

PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:

AMA-GDM- EL-02

TITLE:

LOWER GROUND FLOOR
ELECTRIC POINT MAKRED PLAN

M.E.P. CONSULTANT:

SERVICES CONSULTANT:
VIPUL CONSULTING,
F 9 / 440 , Keshav Marg Chitrakut Scheme,Jaipur
PH:91-0-93146-10438 ,0141-2440946 Mail:vipul8599@yahoo.com

STRUCTURAL CONSULTANT:

SG STRUCTURES
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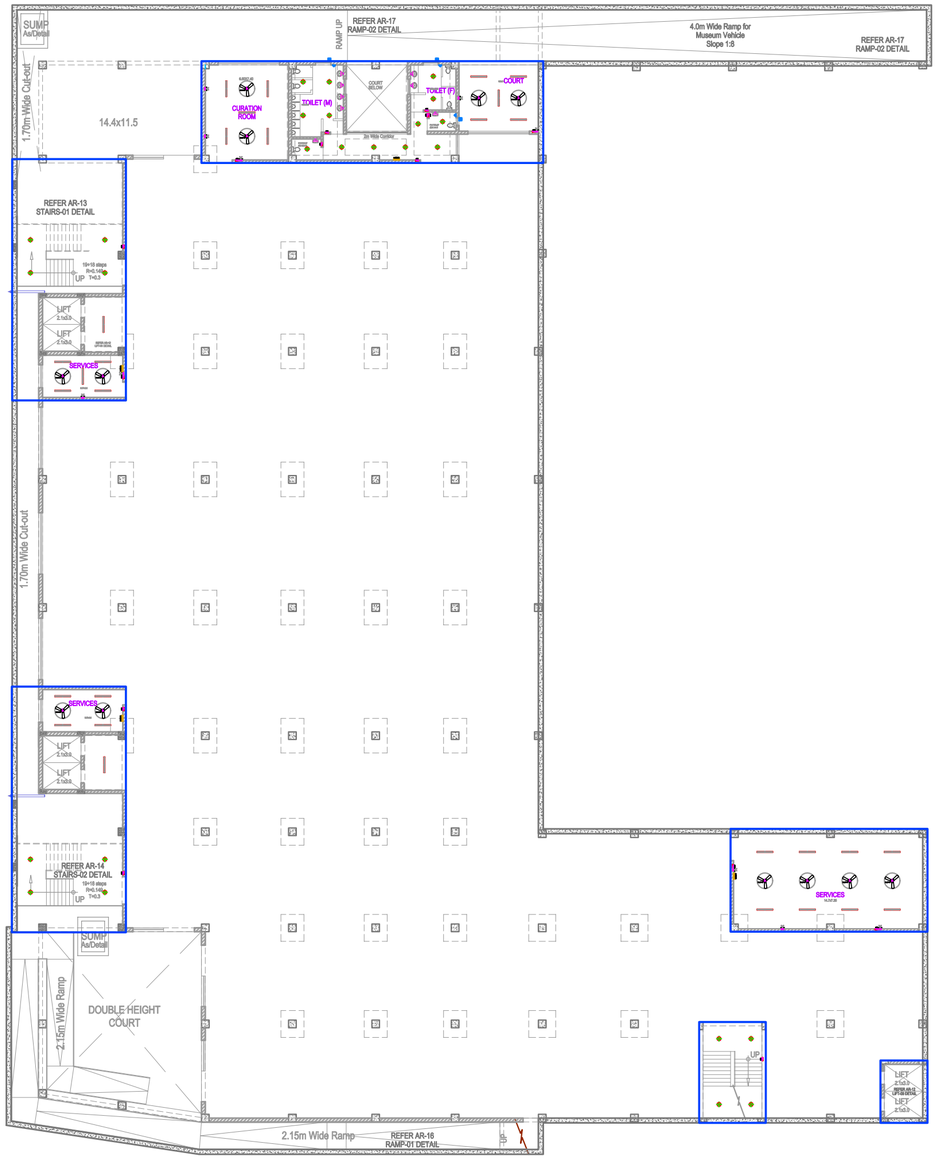
A.MRIDUL
ARCHITECT
71, NEHRU PARK, JODHPUR-342003
Tel: (0291) 2430789 / 2431789
E-mails: amridul.architect@gmail.com

DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 22-04-2022

NORTH:



INTERNAL INCLUSION
WORK FOR VIPUL JI

NOTE:

THIS DRAWING IS THE PROPERTY OF A.MRIDUL ARCHITECT AND MUST NEITHER BE USED NOR COPIED WITHOUT THE PERMISSION OF THE ARCHITECT. THIS DRAWING SHOULD BE READ WITH SUPPORTING DRAWING AND AMBIGUITY, IF ANY, SHOULD BE BROUGHT TO THE NOTICE OF THE ARCHITECT BEFORE COMMENCEMENT OF WORK.

LEGENDS:

Mounting Height	No.	I D	Symbol	Description
CEILING	12	FAN/48"		CEILING FAN 48"
CEILING	29			LED CEILING TUBE LIGHT MAKE:- SYSKA LED CAT NO.:- SSK-T5-20W
+78"	08	ML		12X2 LED MIRROR LIGHT MAKE:- SYSKA LED CAT NO.- FPL-12X2
CEILING	25	DL		LED 6" DOWN LIGHTER 20W (SURFACE MOUNTED) MAKE:- SYSKA LED CAT NO.:- SDL-15W GLD 6.5K/4K
VENTILATOR HT.	03	CR		CEILING ROSE
VENTILATOR HT.	03	EXF		9" DIA FRESH AIR FAN
+42"	15	SB		SWITCH BOARD
+18"	10	PP		16 A POWER POINT
+60"	04	MCB DB		MCB DISTRIBUTION BOARD

REVISIONS

REMARKS	NO.	DATE	ZONE

DISTRIBUTION OF PRINTS:

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DATE	15-07-22		
ISSUED TO			
Nos.			
DATE			

PROJECT:

PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:

AMA-GDM- EL-03

TITLE:

BASEMENT FLOOR PLAN
ELECTRIC POINT MAKRED PLAN

M.E.P. CONSULTANT:

SERVICES CONSULTANT:
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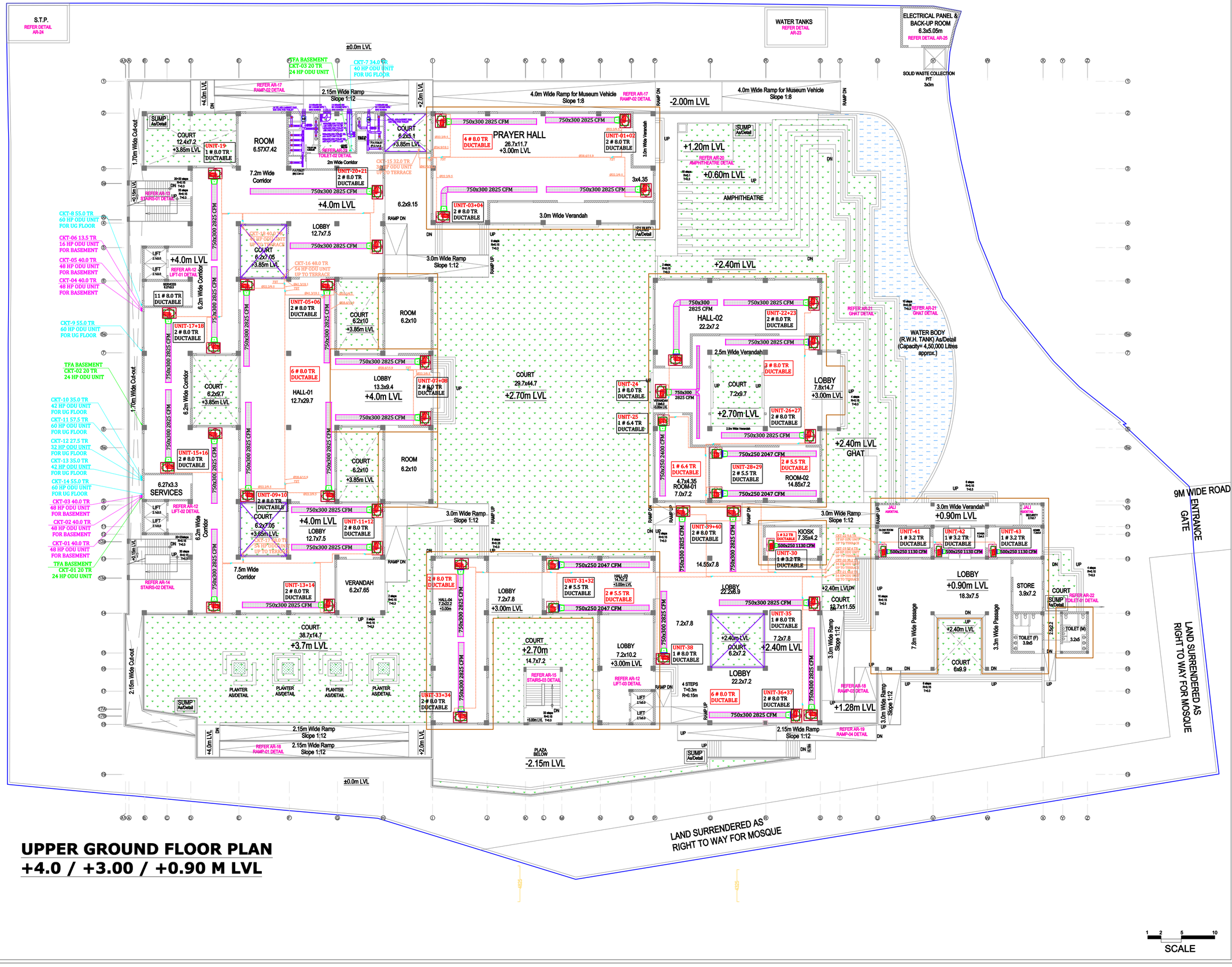
DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 22-04-2022

NORTH:

1 2 5 10
SCALE



UPPER GROUND FLOOR PLAN
+4.0 / +3.00 / +0.90 M LVL

SCALE 1 2 5 10

NOTE:

THIS DRAWING SHOULD BE READ WITH SUPPORTING DRAWING AND AMBIGUITY, IF ANY, SHOULD BE BROUGHT TO THE NOTICE OF THE ARCHITECT BEFORE COMMENCEMENT OF WORK.

HVAC LEGEND	
	FLOOR MOUNTED AHU
	TREATED FRESH AIR UNIT
	CEILING SUSPENDED AHU
	FRESH AIR OVAL DUCT
	SUPPLY AIR OVAL DUCT
	TOILET EXHAUST AIR DUCT
EX FAN	EXHAUST AIR CABINET FAN
	EXHAUST DISC VALVE
	VRV OUTDOOR UNIT
	VRV COPPER PIPE
F.A. FAN	FRESH AIR INLINE FAN
	VRV RAFNET

DISTRIBUTION OF PRINTS:

ISSUED TO	CLIENT		
Nos.	01		
DATE	15-07-22		

PROJECT:

PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:
AMA-GDM- HVAC-01

TITLE:

UPPER GROUND FLOOR AC LAYOUT

M.E.P. CONSULTANT:

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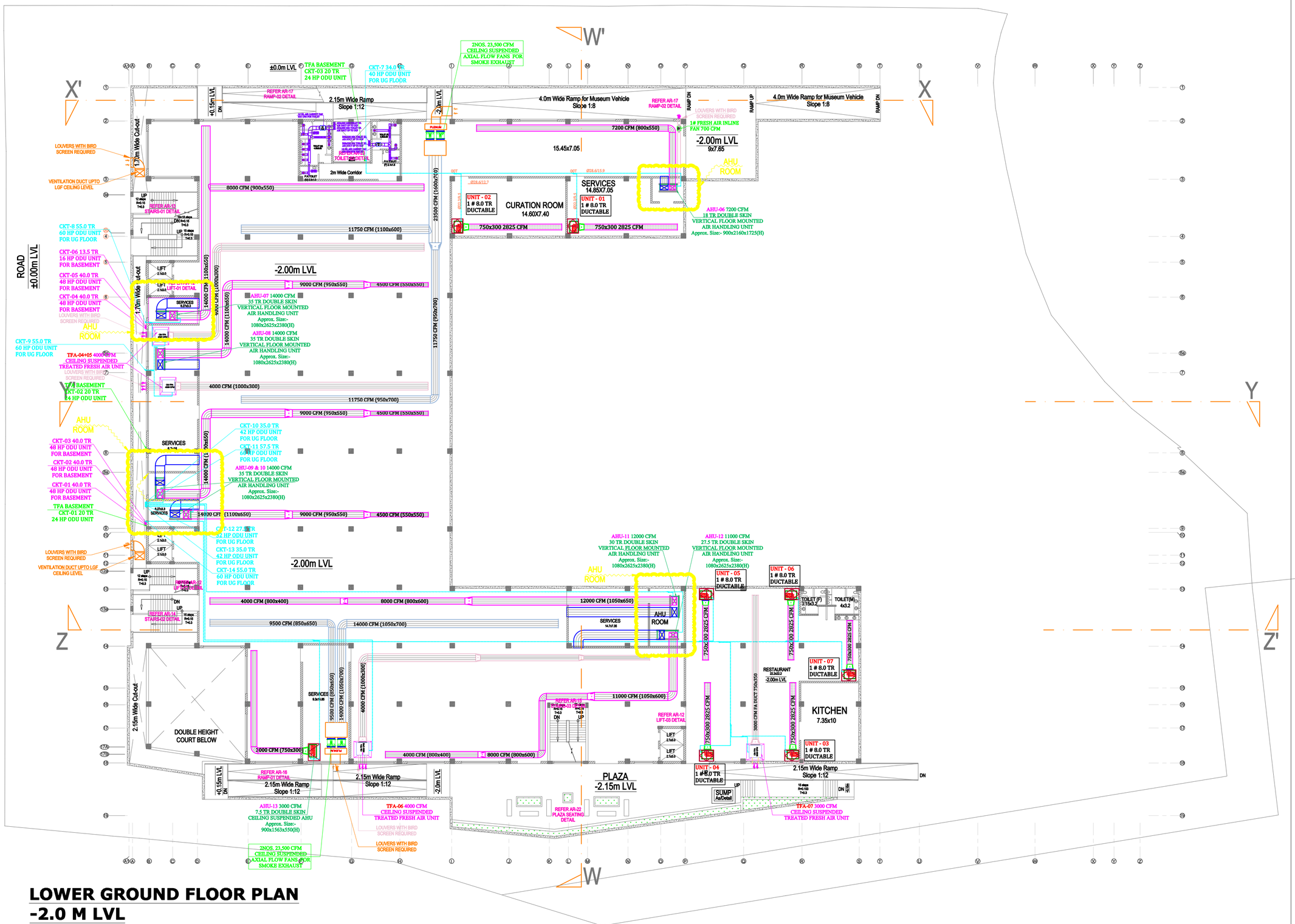
DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 02-05-2022

NORTH:

DRAWN BY:	CHCK BY:
ISHAK KHAN	Sanjay
APPD BY:	DATE:
Vipul Agarwal	09-07-2022



LOWER GROUND FLOOR PLAN
-2.0 M LVL

NOTE:

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HVAC LEGEND	
	FLOOR MOUNTED AHU
	TREATED FRESH AIR UNIT
	CEILING SUSPENDED AHU
	FRESH AIR OVAL DUCT
	SUPPLY AIR OVAL DUCT
	TOILET EXHAUST AIR DUCT
EX FAN	EXHAUST AIR CABINET FAN
	EXHAUST DISC VALVE
	VRV OUTDOOR UNIT
	VRV COPPER PIPE
FA FAN	FRESH AIR INLINE FAN
	VRV RAFNET

DISTRIBUTION OF PRINTS:

ISSUED TO	CLIENT		
Nos.	01		
DATE	15-07-22		
ISSUED TO			
Nos.			
DATE			

PROJECT:

PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:

AMA-GDM- HVAC-02

TITLE:

LOWER GROUND FLOOR AC LAYOUT

M.E.P. CONSULTANT:
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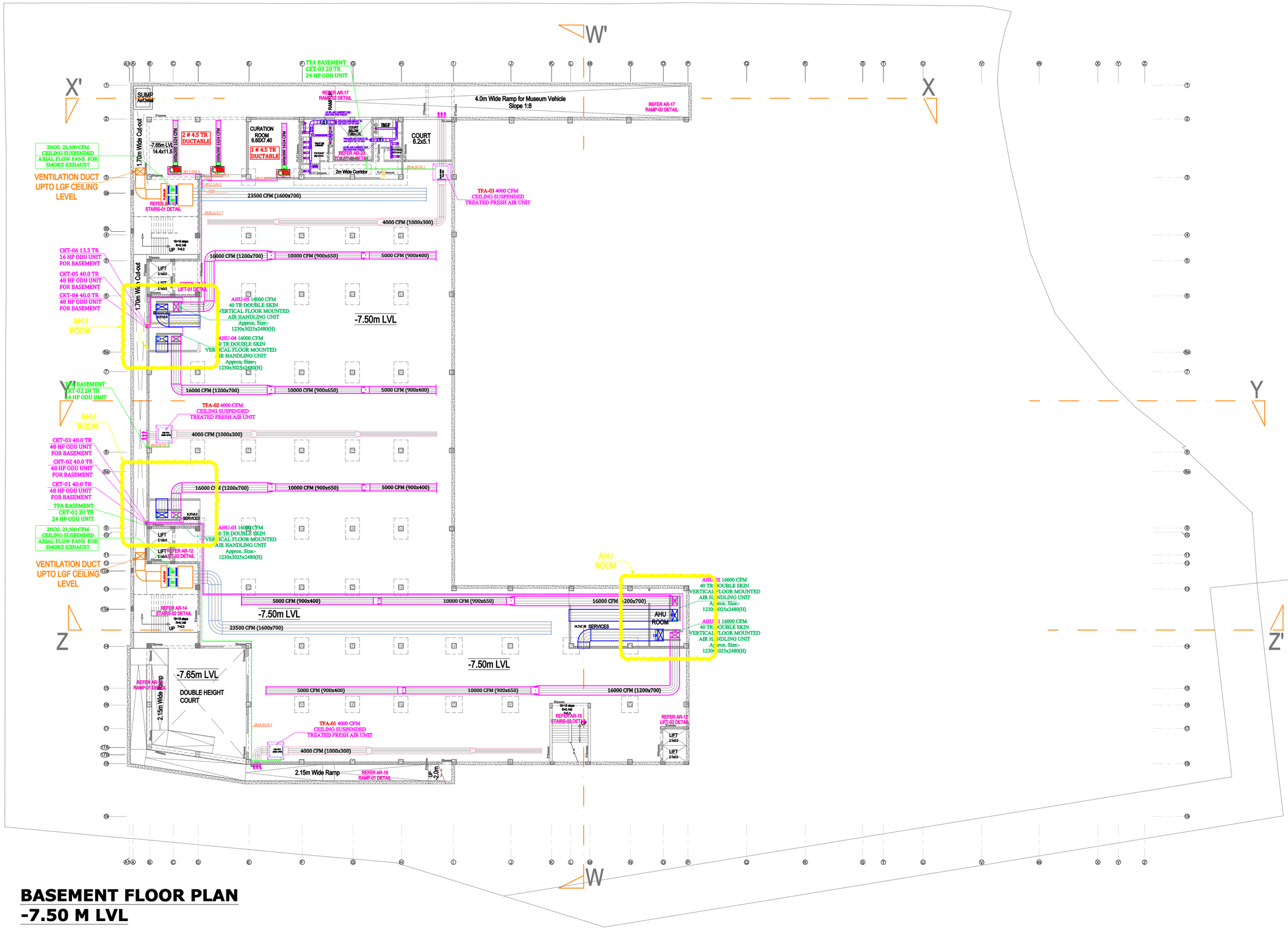
DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 02-05-2022

NORTH: N

DRAWN BY:	CHCK BY:
ISHAK KHAN	Sanjay
APPD BY:	DATE:
Vipul Agarwal	09-07-2022



BASEMENT FLOOR PLAN
-7.50 M LVL

SCALE 1 2 5 10

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HVAC LEGEND	
	FLOOR MOUNTED AHU
	TREATED FRESH AIR UNIT
	CEILING SUSPENDED AHU
	FRESH AIR OVAL DUCT
	SUPPLY AIR OVAL DUCT
	TOILET EXHAUST AIR DUCT
EX FAN	EXHAUST AIR CABINET FAN
	EXHAUST DISC VALVE
	VRV OUTDOOR UNIT
	VRV COPPER PIPE
FA FAN	FRESH AIR INLINE FAN
	VRV RAFNET

DISTRIBUTION OF PRINTS:

ISSUED TO	CLIENT		
Nos.	01		
DATE	15-07-22		

PROJECT:

PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:

AMA-GDM- HVAC-03

TITLE:

BASEMENT AC LAYOUT

M.E.P. CONSULTANT:

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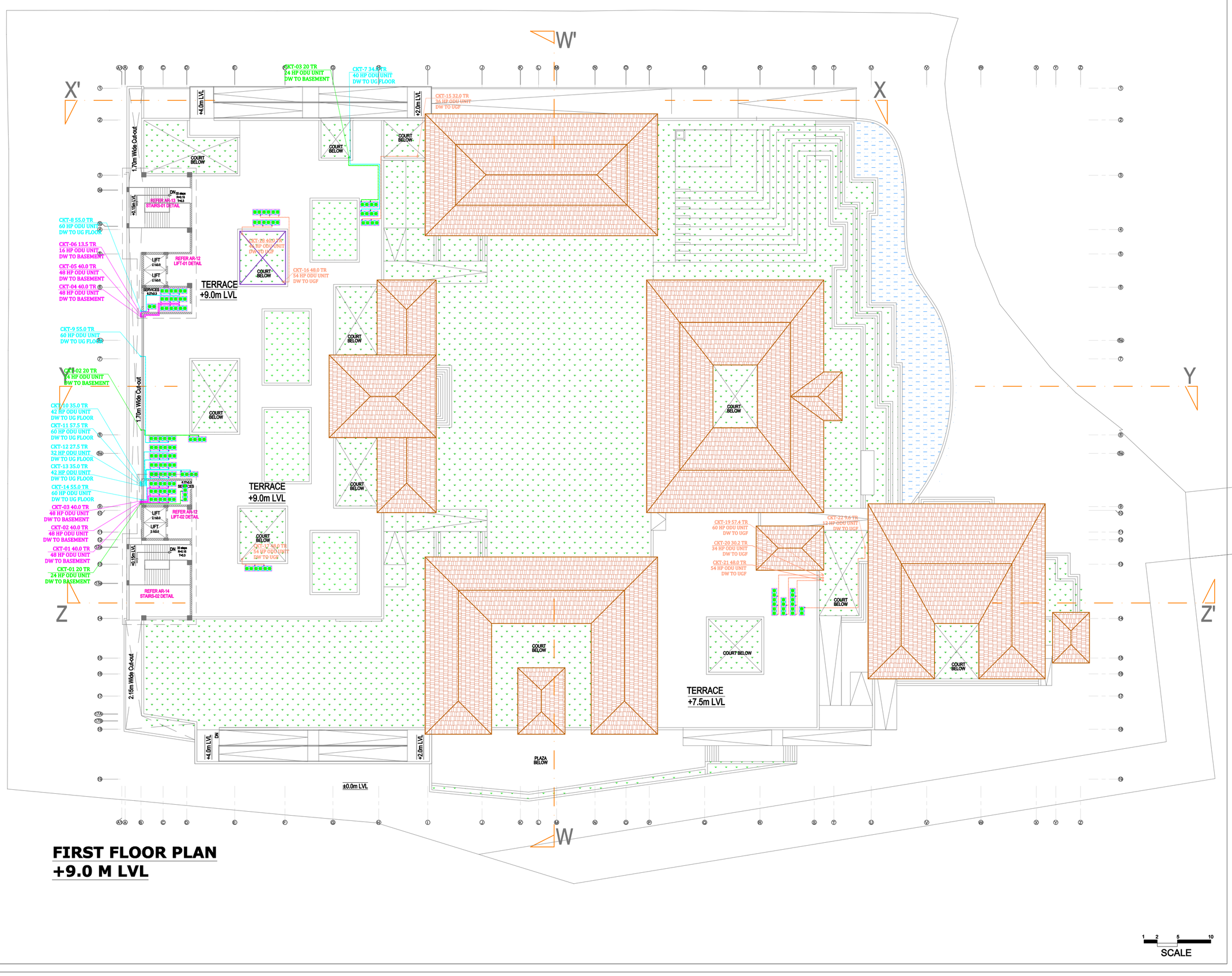
DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 02-05-2022

NORTH:

DRAWN BY:	CHCK BY:
ISHAK KHAN	Sanjay
APPD BY:	DATE:
Vipul Agarwal	09-07-2022



FIRST FLOOR PLAN
+9.0 M LVL

SCALE 1 2 5 10

NOTE:

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HVAC LEGEND	
	FLOOR MOUNTED AHU
	TREATED FRESH AIR UNIT
	CEILING SUSPENDED AHU
	FRESH AIR OVAL DUCT
	SUPPLY AIR OVAL DUCT
	TOILET EXHAUST AIR DUCT
EX FAN	EXHAUST AIR CABINET FAN
	EXHAUST DISC VALVE
	VRV OUTDOOR UNIT
	VRV COPPER PIPE
FA FAN	FRESH AIR INLINE FAN
	VRV RAFNET

DISTRIBUTION OF PRINTS:

ISSUED TO	CLIENT		
Nos.	01		
DATE	15-07-22		

PROJECT:

PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:

AMA-GDM- HVAC-4

TITLE:

FIRST FLOOR AC PLAN

M.E.P. CONSULTANT:

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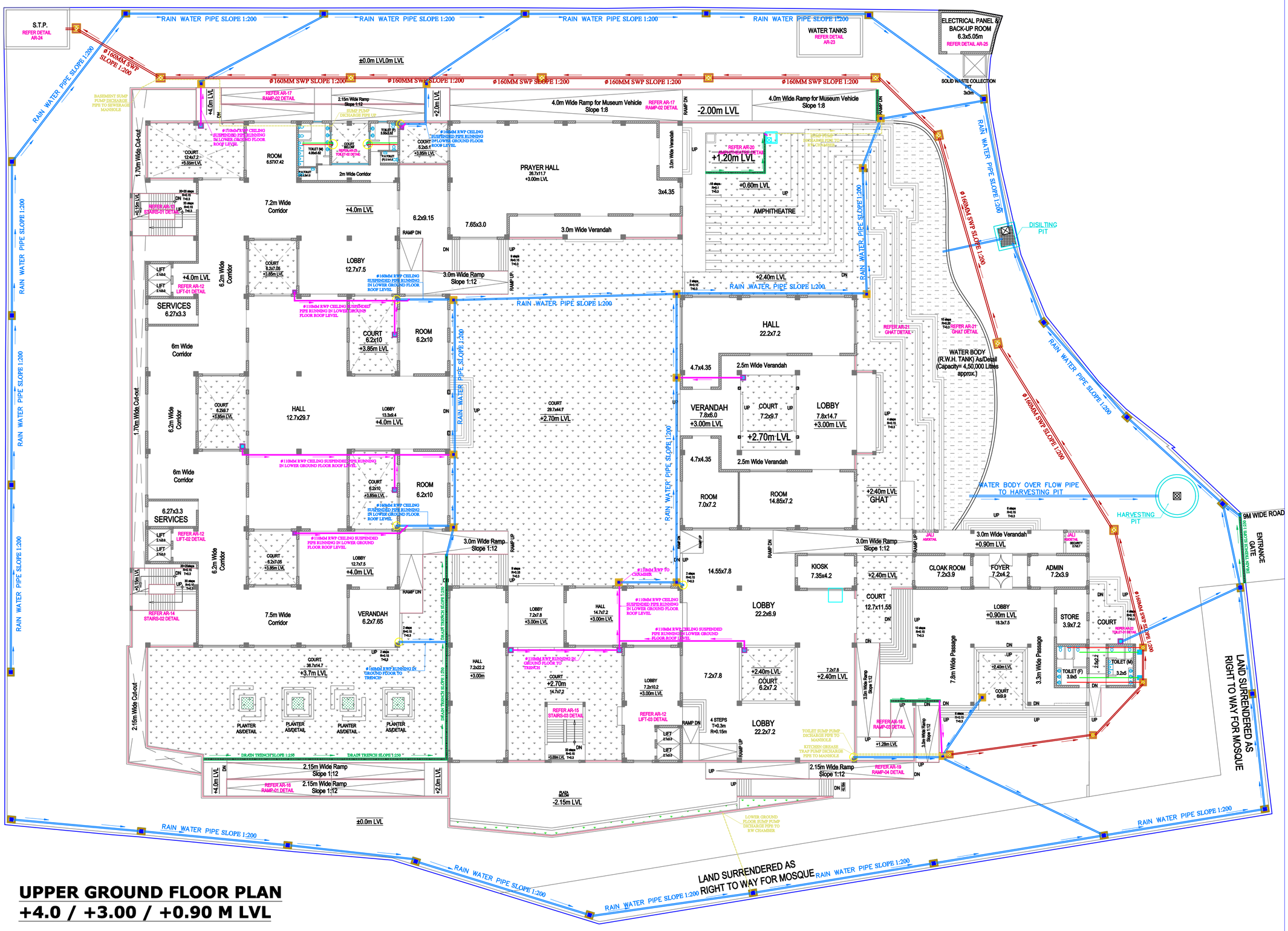
DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 02-05-2022

NORTH: N

DRAWN BY:	CHCK BY:
ISHAK KHAN	Sanjay
APPD BY:	DATE:
Vipul Agarwal	09-07-2022



UPPER GROUND FLOOR PLAN
+4.0 / +3.00 / +0.90 M LVL

LEGEND:-

	SUMP PUMP DISCHARGE PIPE
	Ø6" SOIL WASTE PIPE SLOPE 1:200
	Ø6" RAIN WATER PIPE SLOPE 1:200
	Ø4" SOIL WASTE PIPE SLOPE 1:150
	Ø4" WASTE WATER PIPE SLOPE 1:150
	Ø4" RAIN WATER PIPE SLOPE 1:150
	RAIN WATER GRATING CHAMBER 2'-0" X 2'-0"
	GULLY TRAP (1'-0" X 1'-0") DEPTH - 1'-0"
	MANHOLE FOR SEWERAGE 2'-0" X 2'-0"

SERVICES CONSULTANT:
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DRAWN BY:- FALGUNI

CHECK BY:- SANJAY

APPRVD BY:- VIPUL AGARWAL

DATE:- 20-04-2022

PROJECT:
PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:
AMA-GDM- PS-01

TITLE:
UPPER GROUND FLOOR CONCEPTUAL RAIN WATER DRAINAGE CHAMBER ROUTE PLAN

STRUCTURAL CONSULTANT:
SG STRUCTURES
A-36,1ST FLOOR, SUNDER SINGH BANDARI NAGAR, SWEJ FARM, NEW SANGANER ROAD, JAIPUR-302019
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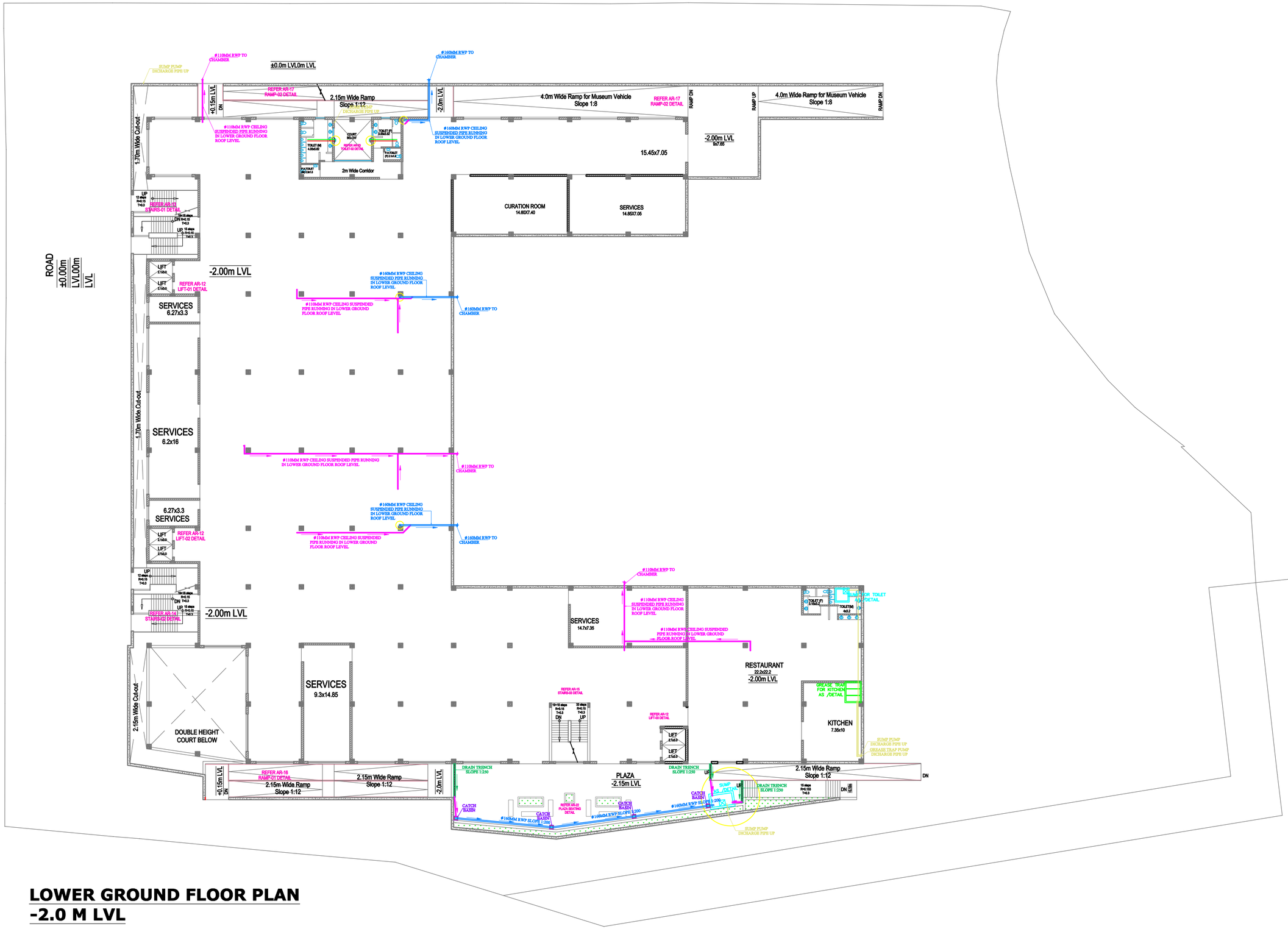
DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 11-10-2021

NORTH: N



LOWER GROUND FLOOR PLAN
-2.0 M LVL

SCALE 1 2 5 10

LEGEND:-

	SUMP PUMP DISCHARGE PIPE
	Ø6" RAIN WATER PIPE SLOPE 1:200
	Ø4" SOIL WASTE PIPE SLOPE 1:150
	Ø4" WASTE WATER PIPE SLOPE 1:150
	Ø4" RAIN WATER PIPE SLOPE 1:150
	DRAIN TRENCH SLOPE 1:250

SERVICES CONSULTANT:
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Mail:vipul8599@yahoo.com

DRAWN BY:- FALGUNI

CHECK BY:- SANJAY

APPRVD BY:- VIPUL AGARWAL

DATE:- 20-04-2022

PROJECT:
PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:
AMA-GDM- PS-02

TITLE:
LOWER GROUND FLOOR CONCEPTUAL RAIN WATER PIPE AND SLOPE ROUTE PLAN

STRUCTURAL CONSULTANT:
SG STRUCTURES
A-36,1ST FLOOR, SUNDER SINGH BANDARI NAGAR, SWEJ FARM, NEW SANGANER ROAD, JAIPUR-302019
E-mail: sg.structures@gmail.com
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DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 11-10-2021

NORTH: N

BASEMENT FLOOR PLAN
-7.50 M LVL

SCALE 1 2 5 10

NOTE:

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LEGEND:-

	SUMP PUMP DISCHARGE PIPE
	Ø6" RAIN WATER PIPE SLOPE 1:200
	Ø4" SOIL WASTE PIPE SLOPE 1:150
	Ø4" WASTE WATER PIPE SLOPE 1:150
	Ø4" RAIN WATER PIPE SLOPE 1:150
	DRAIN TRENCH SLOPE 1:250

SERVICES CONSULTANT:
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Mail:vipul8599@yahoo.com

DRAWN BY:- FALGUNI
CHECK BY:- SANJAY
APPRVD BY:- VIPUL AGARWAL
DATE:- 20-04-2022

PROJECT:
PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:
AMA-GDM- PS-03

TITLE:
BASEMENT
FLOOR CONCEPTUAL RAIN WATER ROUTE PLAN

STRUCTURAL CONSULTANT:
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A-36,1ST FLOOR, SUNDER SINGH BANDARI NAGAR, SWEJ FARM, NEW SANGANER ROAD, JAIPUR-302019
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DEALT: HITESH
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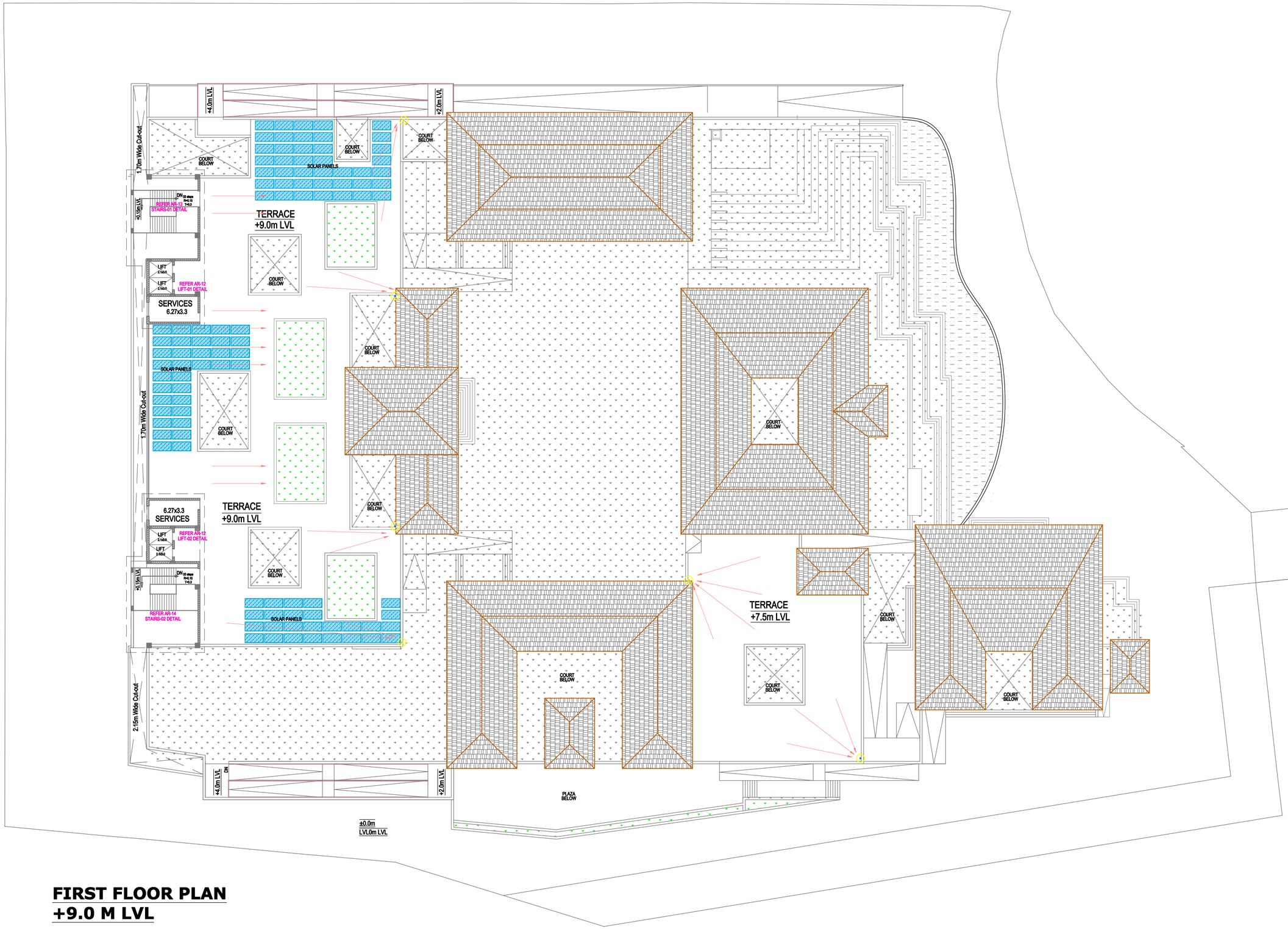
NORTH:



FIRST FLOOR PLAN
+9.0 M LVL

SCALE 1 2 5 10

NOTE:

REVISIONS

REMARKS	NO.	DATE	ZONE

DISTRIBUTION OF PRINTS:

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Nos.	01		
DATE	15-07-22		
ISSUED TO			
Nos.			
DATE			

PROJECT:

PROPOSED
GANDHI DARSHAN MUSEUM
JAIPUR (RAJ.)

DRG NO:

AMA-GDM- PS-04

TITLE:

FIRST/TERRACE FLOOR RAIN WATER VERTICAL PIPE AND SLOPE MARKING PLAN

M.E.P. CONSULTANT:

STRUCTURAL CONSULTANT:

SG STRUCTURES
A-36,1ST FLOOR, SUNDER SINGH BANDARI NAGAR, SWEJ FARM, NEW SANGANER ROAD, JAIPUR-302019
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DEALT: HITESH
SCALE: FIT TO SCALE
DATE: 11-10-2021

NORTH:

VOLUME II

FINANCIAL BID

Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur.

Validate Print Help

Item Rate BoQ

Tender Inviting Authority : Jaipur Development Authority, Jaipur

Name of Work: Interior Works (civil, electrical, HVAC, fire fighting, furnishing etc) in Mahatma Gandhi Museum at Central Park, Jaipur

Contract No ; JDA/EE-HQ/11/2022-23

Name of the Bidder/ Bidding Firm / Company :	

PRICE SCHEDULE

(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	Quantity	Units	BASIC RATE In Figures Rs. P	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	6	7
1	Interior and finishing work of Gandhi Darshan Museum at Central Park, Jaipur on EPC basis complete with civil, development, MEP and furnishing works etc as per detailed specifications complete as per tender drawings, terms and conditions mentioned in bid document.The work includes: **(A) Civil Works:** Civil, development, services, interior and furnishing works including masonry, flooring, false ceiling, doors/ windows, plaster, painting, sanitary fittings, providing and fixing/placing furniture items etc required to make the building operational as per scope of work complete as per direction of Engineer-in- charge. **(B) Electrification work** Electrification works including Internal Electrifiction, Elevator, Fire Fighting Work, HVAC And Ventilation, etc required to make the building operational as per scope of work complete as per direction of Engineer-in- charge.	1.000	Each		**0.00**	**INR Zero Only**
1.1	**Note : All duties, taxes and other levies payable by the Bidder under the contract, or for any other cause, shall be included in the rates and prices, and the total Bid Price submitted by the Bidder.**					
Total in Figures					**0.00**	**INR Zero Only**
Quoted Rate in Words		**INR Zero Only**				