क्रमांक / जविप्रा / अधि.अभि. / 11 / 2023–24 / डी–209 दिनांकः– 21.07.2023

बिड आमंत्रण सूचना

बिड संख्या– अधि.अभि.11 / 06 / 2023–24

जयपुर विकास प्राधिकरण द्वारा जोन–11 क्षेत्र में बालमुकुंदपुरा (अजमेर रोड), जयपुर में 50 बिस्तरों वाला सैटेलाइट अस्पताल का निर्माण कार्य, जिसकी अनुमानित लागत 20.33 करोड रूपये है, के लिए ऑनलाईन निविदा दिनांक 14.08.2023 को सायं 6:00 बजे तक आमंत्रित की जाती है। निविदा बोली का ऑनलाईन आवेदन व भुगतान जविप्रा पोर्टल पर करने की अंतिम तिथि 14.08.2023 को सायं 6:00 बजे तक है। विस्तृत विवरण, जो कि निविदा प्रपत्र में उपलब्ध है, अद्योहस्ताक्षरकर्ता के कार्यालय में अथवा राजस्थान सरकार के उपापन पोर्टल www.sppp.raj.nic.in व www.eproc.rajasthan.gov.in एवं जयपुर विकास प्राधिकरण की वेबसाईट www.jda.urban.rajasthan.gov.in पर देखी जा सकती है।

निविदादाता को निविदा में भाग लेने हेतु आवश्यक है कि :–

1. जयपुर विकास प्राधिकरण की वेबसाईट www.jda.urban.rajasthan.gov.in पर पंजीकृत हो। निविदा शुल्क व आर.आई.एस.एल. प्रक्रिया शुल्क केवल ऑन लाईन ही देय होगी। बोली प्रतिभूति ऑनलाईन अथवा बैंक गारन्टी के द्वारा दी जा सकती है।
2. ऑन लाईन निविदा में भाग लेने हेतु राजस्थान सरकार के पोर्टल www.eproc.rajasthan.gov.in पर पंजीकृत हो।

UBN No.

(आर.के.यादव)
अधिशाषी अभियन्ता–11
जविप्रा, जयपुर

Annexure: 1
NIB for Publication in News Paper

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR
www.jda.urban.rajasthan.gov.in

No:- JDA/EE-11/2023-24/D-209 Dated:-21.07.2023

NOTICE INVITING BID

NIB No. : EE-11/06/2023-24

Online Bids are invited **up-to 6.00 PM of 14.08.2023 for the work" Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur" estimated cost of Rs. 20.33 Crore the last date for applying bid and making online payment on JDA portal is up- to 6.00 PM of 14.08.2023** Details may be seen in the Bidding Document at our office or the website of State Public Procurement Portal website **www.sppp.rajasthan.gov.in, www.eproc.rajasthan.gov.in and ,www.jda.urban.rajasthan.gov. in**

To participate in the bid, bidder has to be:

1. Registered on JDA website www.jaipurjda.org for participating in the Bid, the Bidder has to apply for the Bid and pay the Bidding Document Fee, RISL Processing Fee online only. The Bid Security may be deposited through online or Bank Guarantee.
2. Registered on e-Procurement Portal of Government of Rajasthan www.eproc.rajasthan. gov.in for online e- Bid submission.

UBN No.

(R.K. Yadav)
Executive Engineer-11
JDA Jaipur

Ram Kishor Vyas Bhawan, Indra Circle, Jawahar Lal Nehru Marg, Jaipur-302004
Direct Line : EPABX - +91-141-2569696 Ext.: { }: फैक्स- +91-141-2574555

Annexure: 2
Detail NIB for uploading on SPP Portal, e-Procurement, JDA Portal & as part of NIB Document

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR
www.jda.urban.rajasthan.gov.in

No:- JDA/EE-11/2023-24/D-209 Dated:-21.07.2023

NOTICE INVITING BID
NIB No. : EE-11/06/2023-24

Name & Address of the Procuring Entity	➢ Name: Executive Engineer-11, Jaipur Development Authority ➢ Address: Room No. MB-FF-122, Ram Kishore Vyas Bhavan, Indira Circle, Jawahar Lal Nehru Marg, Jaipur 302004 (Rajasthan)
Subject Matter of Procurement	**Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur.**
Bid Procedure	➢ EPC Mode, 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 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. 1000.00 (In words One Thousand only) o Requisite Bid Security Deposit. Fees.-2500.00 (In words Two Thousand Five Hundred only) o The Bidders are required to submit Bid security, cost of Bidding documents, and Bid processing fees through online payment after registering with JDA on www.jaipurjda.org/e-services/e-tender portal. There should be a gap of 3 working days between the End date for Bid Applying, Online Payment & Bid Submission and Bid Opening date. In the absence of the requisite fee, the bid of the concerned bidder will be considered as non-responsive and shall be liable for rejection
Estimated Procurement Cost	➢ INR 20.33 Crore (Rupees Twenty Crore Thirty Three Lac only)
Bid Security Deposit	➢ Amount (INR: 2% (Rs.40,66,000.00/-) For "AA" class contractors registered in the appropriate class with CPWD, Postal, Telegram, Railway, MES, Other State Government/Central Government undertakings/organizations of Estimated Procurement Cost. (The bidder must capable to bid in the bid as per their enlistment) ➢ 0.5 % (Rs. 10,16,500.00/-) Bidder registered as a contractor in the appropriate class For "AA" in JDA. ➢ In case of Departments of the State Government and undertakings, Corporations, Autonomous bodies, Registered Societies, Cooperative Societies which are owned or controlled or managed by the State Government and Government undertakings of the Central Government shall submit a bid securing declaration in lieu of bid security. ➢ If a joint Venture is allowed in the Bid then 2% (Rs 40.66 Lakh) shall be deposited by bidders (Joint Venture firm).
Start/ End Date for Bid Applying, Online Payment and Bid Submission	➢ Start Date: 24.07.2023 from 9.30 AM onwards ➢ End Date: 14.08.2023 upto 6.00 PM
Physical BG(Bid Security) Submission Start & Closing Date	➢ Original EMD declaration is to be submitted in Room No 215N Extension Building, Jaipur Development Authority, JLN Marg, Jaipur by 16.08.2023 from 9.30 AM to 18.08.2023 up to 3.30 PM
Pre-Bid	➢ 01.08.2023 at 3.00 PM in Manthan Hall, JDA Jaipur

Date/ Time/ Place of Technical Bid Opening	➢ 21.08.2023 at 11.00 AM
Date/ Time/ Place of Financial Bid Opening	➢ Will be intimated later to the Technically qualified bidders
Bid Validity	➢120 days from the bid submission deadline
Time Period	➢ 12 Months
A&F/Job No.	➢ 430/2022-23

* Jaipur Development Authority has decided to receive 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 are as mentioned below:

- **Payment options :**

  Option-1 Bank Guarantee (BG) against EMD/Bid Security

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

  If bidder does not opt for BG against EMD, options of making complete payment through Payment Gateway or through EFT (NEFT/RTGS) will be available.
- Option – 2 : Electronic Fund Transfer (EFT/NEFT/RTGS)

  If the bidder selects payments 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.
- Option – 3 : Payment Gateway (Aggregator)

  This 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.

B . Bid participation Receipt

After confirming payment, the bidder will get Bid participation Receipt on the basis of which user will gat 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.

Note :-

1. Bidder (authorized 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 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 (TypeIII) 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 safe crypt, 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 11 th hour issues like slow speed: chocking 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 (procurement) is also being arranged by DoIT&C, GoR on a regular basis. Bidders interested for 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 documents (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 2013 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.

(R.K.Yadav)
Executive Engineer-11
JDA Jaipur

Jaipur Development Authority, Jaipur

Engineering Procurement and Construction (EPC)

Bid Document

For

Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur

Table of Contents - Summary Description

SECTION I
INSTRUCTION TO BIDDERS (ITB)

Section-I : Instruction to Bidders (ITB)

Important Instruction: - The Law relating to procurement "The Rajasthan Transparency inPublic 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.
		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 (minimum 51%) 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 partners alone, should fulfill the Technical Criteria Similarly Any one of the partners alone, should fulfill the Financial Criteria. For rest of the eligibility criteria, qualification 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.
		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	2.2.1	The Bidder shall be deemed to have carefully examined the conditions, specifications, size, make and drawings, etc. of

	Document and Pre-Bid Meeting		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 (docket) system would be adopted, for PRE-QUALIFICATION, Docket-1 being for Technical Bid and Docket-2 being for Financial Bid. Docket-1:- There will be three separate folders- Folder-1 is for proof of deposition of Bid Security, cost of bidding document and bid processing fee alongwith copy of GST registration, Annexure "B" (RTPP Act/Rules) is mandatory to be fulfilled & signed with seal and copy of enlistment as contractor/ bidder in required category. Folder-II is for bid document and folder-III is for technical bid. (b) The technical bid will be opened only of whose bidders that proper Bid Security, copy of GST registration, proof for deposition of bidding document fee, RISL processing fee, copy of enlistment of contractor in required category and signed Annexure "B" 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 in accordance with ITB Clause 3.10 [Bid Security] shall also be got extended for Ninety 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	All the eligible bidders should submit Bid Security Deposit as ➢ EMD shall be @2% of estimated procurement cost i.e. Rs. 40.00 Lakhs for the bidder registered in appropriate equivalent class in Other Department or 0.5% of estimated procurement cost i.e. Rs. 10.00 Lakhs for bidder registered in 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 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.
		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 Bidexcept Form "B" 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 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 form “B”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 Terms and Conditions of the Technical or Financial Bids	5.8.1	The Procuring Entity shall examine the Bids to confirm 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 , 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.
	6.2Acceptance 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.
	6.4Security 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 Ten percent (10%) 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 @ 10% 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
INVITE BID

जयपुर विकास प्राधिकरण, जयपुर

www.jda.urban.rajasthan.gov.in

क्रमांक / जविप्रा / अधि.अभि. / 11 / 2023–24 / डी–209 दिनांकः– 21.07.2023

बिड आमंत्रण सूचना

बिड संख्या– अधि.अभि.11 / 06 / 2023–24

जयपुर विकास प्राधिकरण द्वारा जोन–11 क्षेत्र में बालमुकुंदपुरा (अजमेर रोड), जयपुर में 50 बिस्तरों वाला सैटेलाइट अस्पताल का निर्माण कार्य, जिसकी अनुमानित लागत 20.33 करोड रूपये है, के लिए ऑनलाईन निविदा दिनांक 14.08.2023 को सायं 6:00 बजे तक आमंत्रित की जाती है। निविदा बोली का ऑनलाईन आवेदन व भुगतान जविप्रा पोर्टल पर करने की अंतिम तिथि 14.08.2023 को सायं 6:00 बजे तक है। विस्तृत विवरण, जो कि निविदा प्रपत्र में उपलब्ध है, अद्योहस्ताक्षरकर्ता के कार्यालय में अथवा राजस्थान सरकार के उपापन पोर्टल www.sppp.raj.nic.in व www.eproc.rajasthan.gov.in एवं जयपुर विकास प्राधिकरण की वेबसाईट www.jda.urban.rajasthan.gov.in पर देखी जा सकती है।

निविदादाता को निविदा में भाग लेने हेतु आवश्यक है कि :–

1. जयपुर विकास प्राधिकरण की वेबसाईट www.jda.urban.rajasthan.gov.in पर पंजीकृत हो। निविदा शुल्क व आर.आई.एस.एल. प्रक्रिया शुल्क केवल ऑन लाईन ही देय होगी। बोली प्रतिभूति ऑनलाईन अथवा बैंक गारन्टी के द्वारा दी जा सकती है।
2. ऑन लाईन निविदा में भाग लेने हेतु राजस्थान सरकार के पोर्टल www.eproc.rajasthan.gov.in पर पंजीकृत हो।

UBN No.

(आर.के.यादव)
अधिशाषी अभियन्ता–11
जविप्रा, जयपुर

रामकिशोर व्यास भवन, इन्दिरा सर्किल, जवाहर लाल नेहरु मार्ग, जयपुर-302004
दूरभाष- : ईपीबीएक्स - +91-141-2569696 एक्सटेंशन: { }: फैक्स- +91-141-2574555

Annexure: 1
NIB for Publication in News Paper

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR
www.jda.urban.rajasthan.gov.in

No:- JDA/EE-11/2023-24/D-209 **Dated:-21.07.2023**

NOTICE INVITING BID

NIB No. : EE-11/06/2023-24

Online Bids are invited **up-to 6.00 PM of 14.08.2023 for the work" Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur" estimated cost of Rs. 20.33 Crore the last date for applying bid and making online payment on JDA portal is up- to 6.00 PM of 14.08.2023** Details may be seen in the Bidding Document at our office or the website of State Public Procurement Portal website **www.sppp.rajasthan.gov.in, www.eproc.rajasthan.gov.in and ,www.jda.urban.rajasthan.gov. in**
To participate in the bid, bidder has to be:

1. Registered on JDA website www.jaipurjda.org for participating in the Bid, the Bidder has to apply for the Bid and pay the Bidding Document Fee, RISL Processing Fee online only. The Bid Security may be deposited through online or Bank Guarantee.
2. Registered on e-Procurement Portal of Government of Rajasthan www.eproc.rajasthan.
   gov.in for online e- Bid submission.

UBN No.

(R.K. Yadav)
Executive Engineer-11
JDA Jaipur

Annexure: 2
Detail NIB for uploading on SPP Portal, e-Procurement, JDA Portal & as part of NIB Document

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR
www.jda.urban.rajasthan.gov.in

No:- JDA/EE-11/2023-24/D-209 **Dated:-21.07.2023**

NOTICE INVITING BID
NIB No. : EE-11/06/2023-24

Name & Address of the Procuring Entity	➢ Name: Executive Engineer-11, Jaipur Development Authority ➢ Address: Room No. MB-FF-122, Ram Kishore Vyas Bhavan, Indira Circle, Jawahar Lal Nehru Marg, Jaipur 302004 (Rajasthan)
Subject Matter of Procurement	**Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur.**
Bid Procedure	➢ EPC Mode, 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 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. 1000.00 (In words One Thousand only) o Requisite Bid Security Deposit. Fees.-2500.00 (In words Two Thousand Five Hundred only) o The Bidders are required to submit Bid security, cost of Bidding documents, and Bid processing fees through online payment after registering with JDA on www.jaipurjda.org/e-services/e-tender portal. There should be a gap of 3 working days between the End date for Bid Applying, Online Payment & Bid Submission and Bid Opening date. In the absence of the requisite fee, the bid of the concerned bidder will be considered as non-responsive and shall be liable for rejection
Estimated Procurement Cost	➢ INR 20.33 Crore (Rupees Twenty Crore Thirty Three Lac only)
Bid Security Deposit	➢ Amount (INR: 2% (Rs.40,66,000.00/-) For "AA" class contractors registered in the appropriate class with CPWD, Postal, Telegram, Railway, MES, Other State Government/Central Government undertakings/organizations of Estimated Procurement Cost. (The bidder must capable to bid in the bid as per their enlistment) ➢ 0.5 % (Rs. 10,16,500.00/-) Bidder registered as a contractor in the appropriate class For "AA" in JDA. ➢ In case of Departments of the State Government and undertakings, Corporations, Autonomous bodies, Registered Societies, Cooperative Societies which are owned or controlled or managed by the State Government and Government undertakings of the Central Government shall submit a bid securing declaration in lieu of bid security. ➢ If a joint Venture is allowed in the Bid then 2% (Rs 40.66 Lakh) shall be deposited by bidders (Joint Venture firm).
Start/ End Date for Bid Applying, Online Payment and Bid Submission	➢ Start Date: 24.07.2023 ➢ End Date: 14.08.2023 upto 6.00 PM
Physical BG(Bid Security) Submission	➢ Original EMD declaration is to be submitted in Room No 215N Extension

Start & Closing Date	Building, Jaipur Development Authority, JLN Marg, Jaipur by 16.08.2023 from 9.30 AM to 18.08.2023 up to 3.30 PM
Pre-Bid	➢ 01.08.2023 at 3.00 PM in Manthan Hall, JDA Jaipur
Date/ Time/ Place of Technical Bid Opening	➢ 21.08.2023 at 11.00 AM
Date/ Time/ Place of Financial Bid Opening	➢ Will be intimated later to the Technically qualified bidders
Bid Validity	➢120 days from the bid submission deadline
Time Period	➢ 12 Months
A&F/Job No.	➢ 430/2022-23

* Jaipur Development Authority has decided to receive 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 are as mentioned below:

- **Payment options :**
  Option-1 Bank Guarantee (BG) against EMD/Bid Security
  Bidder may opt Bank Guarantee (BG) against EMD (Bid Security), for which bidder requires to prepare BG before applying in the tender. The detail of BG requires to be fed on JDA Portal before paying balance amount (Tender Fee + RISL Processing Fee). This amount will be paid through Payment Gateway only, option to make balance payment through EFT (RTGS/NEFT) will not be available.
  If bidder does not opt for BG against EMD, options of making complete payment through Payment Gateway or through EFT (NEFT/RTGS) will be available.
- Option – 2 : Electronic Fund Transfer (EFT/NEFT/RTGS)
  If the bidder selects payments 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.
- Option – 3 : Payment Gateway (Aggregator)
  This 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.

B . Bid participation Receipt

After confirming payment, the bidder will get Bid participation Receipt on the basis of which user will gat 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.

Note :-

1. Bidder (authorized 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 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 (TypeIII) 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 safe crypt, 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 11 th hour issues like slow speed: chocking 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 (procurement) is also being arranged by DoIT&C, GoR on a regular basis. Bidders interested for 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 documents (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 2013 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.

(R.K.Yadav)
Executive Engineer-11
JDA Jaipur

Ram Kishor Vyas Bhawan, Indra Circle, Jawahar Lal Nehru Marg, Jaipur-302004
Direct Line : EPABX - +91-141-2569696 Ext.: { }: फैक्स- +91-141-2574555

Procedure for bidding:

1. **Two-part bid system:**

Two part (Two-envelope) (2 docket) system would be adopted, Docket-1 being for Technical Bid and Docket-2 being for Financial Bid.

Docket-1:- There will be three separate folders- Folder-1 is for proof of deposition of Bid Security, cost of bidding document and bid processing fee alongwith copy of GST registration, signed Annexure "B" and copy of enlistment as contractor/ bidder in required category. Folder-II is for bid document and folder-III is for technical bid.

Docket-2:- There will two separate folders-1 is for financial bid and 2 is for bill of quantities.

The technical bid will be opened only for bidders whose proper Bid Security, copy of GST registration, proof for deposition of bidding document fee, RISL processing fee, copy of enlistment of contractor in the required category and signed Annexure "B" are found to be in order. Bid Security will be accepted only in the form of online deposition or in the form of Bank Guarantee

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 bidding and include all leads, lift etc for the material in his item rate/percentage to be quoted on the rates given in Schedule 'G'. The work shall be carried out in accordance with the Rajasthan PWD detailed specification and to the entire satisfaction of the Engineer – In – Charge of the work.

SCHEDULE – B: LIST OF THE DRAWING TO BE SUPPLIED BY THE DEPARTMENT

The drawing may be seen in the office of the undersigned.

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

(a) **The successful bidder has to submit at least three conceptual plans for the project before the JDA committee and the committee reserves the right for approval of plan.**

(b) **The successful bidder has to submit the planning and working drawings of approved plan and finally to be vetted from MNIT or IIT at his own cost. The structural designs should be prepared using latest software's. The same will need approval by JDA before execution.**

(c) **The successful bidder must note that all activities related to project must be completed within 12 months of stipulated period.**

SCHEDULE - D: TEST OF THE MATERIALS:

The test of the materials and workmanship shall be conducted by the JDA staff as necessary. The result of such tests should confirm to the standards laid down in the Indian standard & or the standards laid down in the detailed specifications of the work by the contractor. Qualified personnel required as per the contractor enlistment rules shall have to be engaged at site by the Contractor. The authority 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 contractor shall be deposited 15 days in advance with the Engineer In charge and be got approved by him before use.

SCHEDULE - F: TIME OF COMPLETION:

The work should start within 10 days of the issue of the work order and complete within time limits.

SCHEDULE – G: EPC METHOD

SCHEDULE – H: SPECIAL CONDITION: Attached Separately.

SCHEDULE – I: COST OF TENDER DOCUMENTS, PROCESSING FEES & BID SECURITY.

The Bid Processing fee is payable in favor of M.D. RISL & Cost of bid document & Bid Security is payable in Favour of the Secretary, JDA, Jaipur. Bidders have to pay bid processing fees, cost of bidding documents, and Bid Security Online. **If a bidder opts to deposit the bid security through bank guarantee, the bank guarantee should be valid for the next seven months after the bid opening date. A copy of the such bank guarantee will be required to be attached with the bid submission documents uploaded on the E-procurement portal of GOR. The bank guarantee will be physically handed over upto prescribed time to Nodal officer of the on-line tendering system of JDA i.e. D.D(E&B) in room No. 215N Extension building, JDA, JLN marg, Jaipur, as per specified in bidding documents,**

Annexure-1. Special Conditions of Contract regarding defect liability period.

Annexure-2A. Bank guarantee will be in specified Performa enclosed with this bidding document for Bid Security.

Annexure-2B. Bank guarantee will be in specified Performa enclosed with this bidding document for Performance Security.

Annexure-A. Compliance with the code of integrity and no conflict of interest (RTPP Act/Rules).

Annexure-B. Declaration by the bidder regarding qualifications (RTPP Act/Rules).

Annexure-C. Grievance Redressal during the procurement process (RTPP Act/Rules).

Annexure-D. Additional Conditions of Contract (RTPP Act/Rules).

Annexure-E. Process for Tender Participation & Depositing Payment on 'Online Tender _Participation' Portal of JDA & Bid Submission on 'e-Procurement Portal' of Government of Rajasthan.

EXECUTIVE ENGINEER -11
JDA, Jaipur

SPECIAL CONDITIONS

SCHEDULE 'H'

01. If there is any typographical error or otherwise in the 'G' Schedule, the rates given in the relevant BSR on which Schedule 'G' has been prepared, shall prevail.
02. The bidder shall follow the provisions of the builder labour regulation and abolition Act, 1970 & Rule, 1971.
03. The JDA shall have the right to cause an audit for technical examination of the work and the final bills of the bidder including all supporting vouchers, abstracts etc. to be made within two years after payment of the final bills and if as a result of such audit, any amount is found to have been overpaid / excess in respect of any work done by the bidder under the contract or any work claimed by him to have been done under this contract and found not to have been executed, the bidder shall be liable to refund such amount and it shall be lawful for the JDA to recover the 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 bidder was paid less then that was due to him under the contract in respect of work executed by him under it, the amount of such underpayment shall be paid by the JDA to the bidder.
4. Wherever any claim against the bidder for the payment of a sum of money arises out of under the contracts, the JDA shall be entitled to recover the sum by appropriating in part or whole of the performance security of the bidder, In the event of the security being insufficient or if no security has been taken from the bidder then the balance of the total sum recoverable as the case may be deducted from any sum then due or which at any time their contract with the JDA should this sum be sufficient to recover the full amount recoverable. The bidder shall pay to JDA on demand the balance remaining due. The JDA shall further have the right to affect such recoveries under P.D.R. Act.
5. The rate quoted by the bidder shall remain valid for a period of 120 days from the date of opening of the bids.
6. By submission of the Bid the bidder agrees to abide by all printed conditions provided in the PWD manual from 64 (Chapter 3-para 36) and subsequent modification.
7. No conditions are to be added by the bidder and the conditional Bid is liable to be rejected.
8. If any bidder withdraws his Bid prior to the expiry of said validity period given at S. No. 5 or mutually extended prior or makes modifications in the rate, terms and conditions of the Bid within the said period which are not acceptable to the authority or fails to commence the work in the specified period, fails to execute the agreement the authority shall without prejudice to any, other right or remedy, be at liberty to forfeit the amount of bid security given in any form absolutely. If any bidder, who has submitted a Bid does not execute the agreement or start the work or does not complete the work and the work has to be put to rebidding he will stand debarred for six months from participating of Biding in JDA in addition to forfeiture of bid security/ Performance Security and other action under agreement
9. Any material not conforming to the specifications collected at the site have to be removed by the bidder within a period of 3 days of the instruction, issued by the Engineer -In charge in writing failing which, such material shall be removed by the Engineer-In charge at risk and cost of the bidder after the expiry of 3 days period.
10. The material collected at the site and paid provisionally shall remain under the watch and ward of the bidder till it is consumed fully on the work.
11. The rates provided in the Bidding documents are inclusive of all Taxes and royalties otherwise specified.
12. No extra lead of earth/material shall be paid over and above as specified in 'G' Schedule, Source/ borrow pit area for the earth shall have to be arranged by the Bidder at his own cost.
13. Undersigned has full right to reject any or all Bids without giving any reasons.
14. As per the 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 etc.”
15. Special Conditions of the Contract regarding the Defect Liability Period (DLP) for works costing Rs. 25.00 lacs and more shall be applicable (Annexure-I).
16. The Bidder is required to submit a copy of their enlistment as a contractor.
17. Conditions of RPWA-100 will be mandatory & acceptable to the bidder.
18. The bidder will have to install display boards at the site of work as directed by Engineer in charge.

19. All the provisions of THE RAJASTHAN TRANSPARENCY IN PUBLIC PROCUREMENT ACT, 2012 and Rules, 2013 and amendments issued from time to time by the Finance Department, GOR shall be applicable. If there are 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 prevail.

20. In case the rate received in the bid is below than BSR rate, additional Performance security shall be deposited by the bidder as per Rule 75 (A) of RTPP Rules.

21. The Annexure “B” (RTPP Act/Rules) is mandatory to be fulfilled & signed with sealby the bidder failing which the bid shall summarily be rejected without asking for any clarification.

22. Contractors enlisted in JDA, should be get reviewed periodically. The registered bidder who has not been reviewed within a period of 5 years 3 months, shall not be allowed to participate in the bid. Contractors enlisted in other departments shall be as per the provision of PWF&AR.

23. Price variation Clause not applicable.

Executive Engineer -11
JDA, Jaipur

ANNEXURE '1'

SPECIAL CONDITIONS OF CONTRACT REGARDING DEFECT LIABILITY PERIOD (DLP) FOR WORKS COSTING RS. 25.00 LACS AND MORE

Table-1

S.No.	Type of work	DLP Period
1.	**Bridge Work**	**5 Years**
2.	**CD Work**	**5 Years**
3.	**CC Road. PQC Work**	**5 Years**
4.	**CC tiles/Krebs/medians**	**5 Years**
5.	**Drains**	**3 Years**
6.	**Roads**	
	(i)Two-layer WBM/GSB	**6 months or one full rainy season whichever is later**
	(ii)For Renewal/Strengthening	
	(a)BT up to 30 mm thickness	**1 Years**
	(b)BT above 30 mm to up to 40 mm	**2 Years**
	(c)BT above 40 mm to up to 90 mm	**3 Years**
	(d)BT above 90 mm thickness	**5 Years**
	(iii) New Roads	
	(a) BT up to 90 mm	**3 Years**
	(b) BT more than 90 mm	**5 Years**
7.	**Compound wall**	**3 Years**
8.	**Building Work**	
	(i) Work pertaining to Sanitary work electrical works, Joinery works and painting work.	**5 Years**
	(ii) Work pertaining to the Building structure and other civil works	**5 Years**
9.	**Electric work except for maintenance**	**5 years**
10.	**Sewer/Water supply including STP and water supply-related work except for maintenance works.**	**3 Years**

1. ROAD-WORKS

1.1 The Defect Liability Period (DLP) for all Road works excluding patch repair work shall be as per the above table. Road works executed by the Contracting agency shall be maintained by them at their own cost for completion (DLP) from the actual date of completion of work as per the clause in the Contract Agreement and Special Condition of the Contract.

1.2 No extra payment shall be made to the contracting agency on account of maintenance of Road works and removal of defect during the Defect Liability Period.

1.3 The word "Road Works" means all new Road Works construction, widening, strengthening, up-gradation and renewal works

1.4 The word "Maintenance of Road Works during Defect Liability Period" means

(i) Routine maintenance of Road Works,

(ii) To remove the defect as & when appear in part and the entire structure of Road Works, in the specified time and keeping the Road Surface with good riding quality and

(iii) Damages due to improper drainage/drains, local flooding, depressions on roads etc.

1.5 The contracting agency shall do the routine maintenance of Road works, including pavement, road side and cross drains including surface drains to the required standards and keep the entire road surface and structure in Defect free conditions during the entire period of routine maintenance, which begins at the completion of the construction work and ends after complete (DLP).

1.6 The routine maintenance shall consist of the routine maintenance operation defined in the manual for the maintenance of roads of MoRTH and shall be carried out accordingly.

1.7 The routine maintenance activities and their periodicity.

S.No.	Name of Item/Activity	Frequency of operations in one year
1	Restoration of rain cuts and dressing of berms.	Once in a year, generally after rains.
2	Making up of shoulders.	As and when required.
3	Maintenance of Bituminous surface road and/or gravel road/WBM road including filling pot holes and patch repairs etc.	As and when required.

4	Insurance of proper functioning of drains including civil maintenance and desalting of drains. (If constructed by the same Road agency or not)	As and when required.
5	Maintenance of road signs. (If installed by the same Road agency)	Maintenance as and when required. Repainting **once in every one and a half years.**
6	Road Marking, Kerb Stone / Dand. (If done by the same Road agency)	**Thermoplastic Paint** Maintenance as and when required. Repainting **once in everyone & a half year.** **Ordinary Paint** Maintenance as and when required. Repainting **thrice in every year.**
7	Damages beyond the control of the agency.	Road cuts made by various agencies for utility, duly permitted by JDA / JNN will have to be repaired by the agency on the same rates of the contract agreement till DLP.

2. General

2.1 Inspection of works during the Defect Liability Period

2.1.1 The contracting agency shall undertake a joint detailed inspection along with Engineer-in-charge/A.En., at least once in three months in case of all Road works. The Engineer-in-charge can reduce this frequency in case of an 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 to those road sections, which are likely to be damaged during rainy season.

2.1.2 One register has to be maintained by every AEN for recording the inspection details of works in his jurisdiction under defect liability period.

2.2 Conditions regarding **Performance Security**

2.2.1 Security for DLP-

The contracting agency shall have to furnish Performance Security in the form of Bank Guarantee valid from the actual date of completion, which shall be assigned by the Engineer-in-charge.

2.2.2 The release of PS amount shall be as per following table 2 :-

S.No.	Released PS / DLP Period	1 Year	2 Years	3 Years	5 Years
1.	After 1 year	100%	40%	20%	10%
2.	After 2 year		60%	20%	10%
3.	After 3 year			60%	10%
4.	After 4 year				20%
5.	After 5 year				50%

The Performance Security will be released as per the above table after a satisfactory performance certificate issued by Engineer-In-Charge:-

2.2.3 Forfeiture of Performance Security

In case the contracting agency fails to rectify the defects within the stipulated period notified to him by the Engineer-in-charge concerned under the contract agreement, the Engineer-in-charge shall serve a final notice for 5 days time reckoned from the date of issue of notice to rectify the defects. In case the contracting agency not responding to the notice and fails in the rectification of defects the Engineer-in-charge will get the defect removed at the risk and cost of the contracting agency. Action such as encashment of Bank Guarantee and action under enlistment rules etc. shall also be taken against the contracting agency by the competent authority.

1.2.4 Force Majeure

The defect that arises due to earthquakes, cyclones, and natural calamities shall not be the responsibility of contracting agency.

2.2.5 Various conditions for managing DLP are as under :-

(i) At the time of completion of work, final component shall be worked out for each individual item like BT/CC/tiles/ drains etc. (as per different categories in Table-I), DLP shall be operative based upon type of individual item ex:- CC-5 years, BT-1/2/3/5 years, Drain-3 years etc.

(ii) If any work, amount is less than Rs. 25 lacs but later on due to extra/excess work, if amount of final work cresses more than Rs. 25 lacs, DLP shall be operative as per rule for each individual item.

(iii)Similarly, if any work is more than Rs. 25 lacs but after finalization amount of work is less than Rs. 25 lacs, DLP should be operative for six months or rainy season whichever is later.

(iv) During DLP period if contractor fails to repair any work even after the issue of 7 days written notice, the same work shall be got executed by the respective Executive Engineer at the contractor's risk and cost. This process shall be applicable throughout the DLP period. After completion of DLP period in such works contractor should

be debarred and blacklisted, from JDA for three years as per RTPP rule 2012 and 2013 where his defaults twice in a single agreement or in two different works.

(v) Quarterly Inspection as per rules shall be carried out and DLP registers shall be maintained by respective Executive Engineers to monitor the DLP repairs.

(vi) Special and regular inspection shall also be carried out as per order no. JDA/XEN & 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.

(vii) In case JDA feels to take up work on any existing DLP road due to any reason, the following procedure should be adopted:

(a) At the time of withdrawal total liability of repairs as per DLP conditions to be carried out and the contractor shall be asked to complete the same. After completion of assessed repairs, DLP period shall be released after deduction amt. as per following table-III.

Table-3

% Recovery on withdrawal of DLP of work order / DLP period	1 Year	2 Year	3 Year	4 Year	5 Year
1 Year	1.12	-	-	-	-
2 Year	2.55	1.43	-	-	-
3 Year	4.38	3.26	1.83	-	-
5 Year	9	7.88	6.45	4.62	2.47

Note:- Calculation is to be done on a quarterly basis.

(b) In case the 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 the total retained amount of PS same shall be recovered from other works and as per PDR rules. The amount as per Table 3 is also to be deducted in addition to this amount.

(viii) Based upon the type of work, DLP conditions for works to be carried out during the DLP period with their frequency of the respective type of work shall be prepared by respective SE"s after approval of these periods.

3. In case patch repairs/civil maintenance works costing more than Rs. 25.00 Lakhs, defect liability period will as per clause 37(C) of Contract Agreement.

Executive Engineer -11
JDA, Jaipur

Annexure-2A

Specified Bank Guarantee Performa for Bid Security

Section - 6

Form of (Bank Guarantee) -En cashable at the branch of the bank in Jaipur City.

To
Secretary,
Jaipur Development Authority,
Jaipur

Sub:

Bank Guarantee No. _____ dated _____ for [amount of Security in figures] [in words] on behalf of _____ [Name of the Bidder] against Bid Security for the **Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur**

WHEREAS, _____ [name of Bidder with address] **(hereinafter called "the Bidder")** has submitted his Bid dated ..... for the work of **……**(here in after called " the Bid ").

KNOW ALL PEOPLE by these presents that we _____ _____ (Name of Bank) of having our registered office at _____[name of country] having our registered office at _____ (hereinafter called "the Bank") are bound unto Secretary, Jaipur Development Authority. (Hereinafter called "the Employer") in the sum of Rupees _____ **[Amount of Security in figures] Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur** only for which payment will and truly to be made to the said Employer, the Bank binds itself, its successors, and assigns by these presents.
That on demand of JDA , this Bank Guarantee is cashable at the 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.:

SEALED with the Common Seal of the said Bank this _____ day of _____ of 20____.

THE CONDITIONS of this obligation are:

(1) if the Bidder withdraws his Bid during the period of Bid validity specified in the Form of Bid;
(2) if the Bidder refuses to accept the correction of errors in his bid;

(3) If the Bidder, having been notified of the acceptance of his Bid by the Employer during the period of Bid validity;

(a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, or
(b) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders;

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or more of the above conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date 30 days after the date of expiration of the Bid Validity, as stated in the Instructions to Bidders, or any such extension thereto as may be agreed by the Bidder, a

notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank no later than the above date.

The amount covered under the above Bank Guarantee shall be automatically credited in the accounts of JDA in ICICI Bank, JDA Campus, Jaipur through **ISFC code No ICICI0006754. 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 writing for its release.

Date _____Signature of the Bank_____

Witness_____ Seal _____
[Signature, Name, and Address]

[**Note: To be furnished on appropriate non-judicial stamps & should be valid for the next 7 months from the bid opening date]**

Annexure-2B

Specified Bank Guarantee Performa for Performance Security

Section - 6

Form of (Bank Guarantee) -En cashable at the branch of the bank in Jaipur City.

To

Secretary, Jaipur Development Authority,Jaipur

Sub:…….

Bank Guarantee No. _____ dated _____ for [amount of Security in figures] [in words] on behalf of _____ [Name of the Bidder] against Performance Security for the **Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur** WHEREAS, _____ [name of Bidder with address] **(hereinafter called "the Bidder")** has submitted his Bid dated ..... for the work of **……**(herein after called " the Bid ").

KNOW ALL PEOPLE by these presents that we _____

_____ (Name of Bank) of having our registered office at **Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur** having our registered office at _____ (hereinafter called "the Bank") are bound unto Secretary, Jaipur Development Authority. (Hereinafter called "the Employer") in the sum of Rupees _____ **[Amount of Security in figures]** _____ (in words) only for which payment will and truly to be made to the said Employer, the Bank binds itself, its successors, and assigns by these presents.

That on demand of JDA, this Bank Guarantee is cashable at the 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.:

SEALED with the Common Seal of the said Bank this _____ day of _____ of 20____.

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand within valid period of this guarantee.

This Guarantee will remain in force up to and including the date 30 days after the date of expiration of the Bid Validity, as stated in the Instructions to Bidders, or any such extension thereto as may be agreed by the Bidder, a notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank no later than the above date.

The amount covered under the above Bank Guarantee shall be automatically credited to the accounts of JDA in ICICI Bank, JDA Campus, Jaipur through **ISFC code No ICICI 006754. 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 writing for its release.

Date_____Signature of the Bank_____

Witness_____ Seal _____

[Signature, Name and Address]

[Note: To be furnished on appropriate non-judicial stamps.]

Annexure A
(RTPP Act/Rules)

Compliance with the Code of Integrity and No Conflict of Interest

Any person participating in a procurement process shall-

(a) Not offer any bribe, reward or gift or any material benefit either directly or indirectly in exchange for an unfair advantage in the procurement process or to otherwise influence the procurement process;
(b) Not misrepresent or omit that misleads or attempts to mislead so as to obtain a financial or other benefit or avoid an obligation;
(c) Not indulge in any collusion, Bid-rigging or anti-competitive behavior to impair the transparency, fairness and progress of the procurement process;
(d) Not misuse any information shared between the procuring entity and the bidders with an intent to gain an unfair advantage in the procurement process;
(e) 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;
(f) Not obstruct any investigation or audit of a procurement process;
(g) Disclose conflict of interest, if any; and
(h) 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 not 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.

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.

Annexure B
(RTPP Act/Rules)

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 payable 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 offense 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:

Place:

Signature of the bidder

Name:

Designation:

Address:

Note:- Annexure "B" is mandatory to be fulfilled & signed with seal by the bidder failing which the bid shall summarily be rejected without asking any clarification.

Annexure C

(RTPP Act/Rules)

Grievance Redressal during Procurement Process

The designation and address of the First Appellate Authority :

For works costing up to Rs. 300.00Lakhs - Jaipur Development Commissioner, JDA, Jaipur.

For works costing above Rs. 300.00Lakhs - Executive Committee, JDA, Jaipur.

The designation and address of the Second Appellate Authority:

For works costing up to Rs. 300.00Lakhs - Executive Committee, JDA, Jaipur.

For works costing above Rs. 300.00Lakhs - Principle Secretary/ACS, Urban Development & Housing Department, GOR, Jaipur.

(1) Filing an appeal: -

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:

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:

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 Endeavour 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 the 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.

(4) 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 the need of procurement

(b) Provisions limiting the 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

(5) Form 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 the first appellate authority or second

The appellate authority, as the case may be, in person or through registered post or authorized representative.

(6) Fee for filing Appeal: -

(a) Fee for the first appeal shall be rupees two thousand five hundred and for the second appeal shall be rupees ten thousand, which shall be non-refundable.

(b) The fee shall be paid in the form of a bank demand draft or banker's cheque of a scheduled bank in India payable in the name of the appellate authority concerned.

(7) Procedure for disposal of Appeal: -

(a) The first appellate authority or second appellate authority as the case may be, upon the filing of the appeal, shall issue notice accompanied by a copy of the appeal, affidavit and documents, if any, to the respondents and fix a date of hearing

(b) On the date fixed for hearing, the first appellate authority of the second appellate authority, as the case may be shall-

(i) Hear all the parties appeal presenting 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 a copy of the 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.

Annexure D

(RTPP Act/Rules)

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 the 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) 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.

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 the 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 fifty 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 the contract.

(ii) 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 circumstances, the bidder shall not be entitled to any claim or compensation except otherwise provided in the conditions of the 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 the last supply. If 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 is 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.

ANEXTURE-"E"

Process for Tender Participation & Depositing Payment on 'Online Tender Participation' Portal of JDA & Bid Submission on 'e-Procurement Portal' of Government of Rajasthan: -

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 a 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 (authorized 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.

Jaipur Development Authority, Jaipur. Bid Participation Receipt	
	Date & Time:-
Bid Detail	
Bid ID: Bid Title: Bid Value:	Procurement Entity:- Bid Opening Place:
Bidder Detail	
Name of Entity: Registration Type: Payment Mode: Instrument No.:	Mobile No.: Instrument Amount: Payment Channel: Instrument Date:

Dates Detail		
Sr. No.	Event Name	Event Date
1	Publishing Date	
2	Bid Opening Date	

Specific Instrument for eProc Rajasthan			
Instrument Type			
Instrument Number	Head Name	Amount	Date
	Tender Fee RISL Processing Fee Bid Security Deposit		
Issuer Detail: Jaipur Development Authority		Challan Number:	

More details about Registration Process, Terms and Conditions and FAQ along with contact detail is available on JDA website www.jda.urban.rajasthan.gov.in.

Section III

Evaluation and Qualification Criteria (EQC)

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR

SPECIAL CONDITION OF THE CONTRACT FOR **Pre-Qualification** OF CONTRACTORS

Name of work:- Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur.

Special conditions of contract of PRE-QUALIFICATIONas detailed here under, shall be applicable in addition to all other terms and conditions already prescribed under standard agreement forms/rules and regulations to contract:

1. Procedure:

Procedure for PRE-QUALIFICATIONwould be as follow:

(b) Two-envelope (docket) system would be adopted, for PRE-QUALIFICATION, Docket-1 being for Technical Bid and Docket-2 being for Financial Bid.

Docket-1:- There will be three separate folders- **Folder-1** is for proof of deposition of Bid Security, cost of bidding document and bid processing fee alongwith copy of GST registration, Annexure "B" (RTPP Act/Rules) is mandatory to be fulfilled & signed with seal and copy of enlistment as contractor/ bidder in required category. Folder-II is for bid document and folder-III is for technical bid.

Docket-2:- There will two separate folders-1 is for financial bid and 2 is for bill of quantities.

(c) The technical bid will be opened only of whose bidders that proper Bid Security, copy of GST registration, proof for deposition of bidding document fee, RISL processing fee, copy of enlistment of contractor in required category and signed Annexure "B" are found to be in order. The bid Security will be accepted only in from of online deposition or in form of Bank Guarantee

(d) The Technical Bid envelope would be opened on the date……..at…….pm in the chamber of Superintending Engineer……..

(e) The Financial Bid envelope would be opened only of those bidders who fulfill all the PRE-QUALIFICATION CRITERIA.

2. Criteria:

Criteria for PRE-QUALIFICATIONwould be as follows:-

2(a) The bidder should have completed/ executed "Similar work" in the last 7 financial years (including the current year, if opted by the bidder) as under:

One work costing not less than Rs. 10.00 crore;
or
Two works each costing not less than Rs. 7.00 crore;
or
Three works each costing not less than Rs. 5.00 crore

"Similar work" shallmean —Construction of a buildings like Hospitals/premium residential buildings/hotels/guest houses/buildings related to hospitality with RCC framed structure or Composite framed structure of atleast 3 storey with water supply, sanitary works , Internal/external electrification work, HVAC work, Fire Fighting and Interior& furnishing work in single agreement.

RCCframedstructure/CompositeframesstructureshouldconsistofColumns,beams & slabs of RCC or Structural Steel/Prestress concrete. The bidder shallsubmitabstractofcostofcompletedsimilarwork(s)alongwithsupportingdocuments and certificate issued by the experience issuing authority in support ofthis.

Note:-1

1. Mumtyandmachineroom shallnot bereckonedinstorey.
2. Each basement, stilt/Mezzanine constructedinthebuilding shallbeconsideredasastorey.
3. Thevalueofexecutedworksshallbebroughttocurrentcostinglevelbyenhancing the actual value of work at simple rate of 10% per annum, calculatedfromthedateofcompletiontoprevious dayoflastdateofsubmissionofbid.

Note:-2

(i) The bidder should enclose work orders, completion/ executed certificates of completed/ executed works.

(ii) In case of JV, the works of both the partners may be considered in case of more than one similar nature works are to be considered.

(iii) The starting & completion date of the work is to be in between above said financial year. If not, then maximum work (70%) is to be completed in the above said financial year.

(iv) If a bidder has submitted a certificate having different components/ nature of work then a proper completion certificate of required similar nature work ***&***experience is to be enclosed.

(v) Certificate issued by Govt. of India, State Govts., Union Territory, Govt. Undertakings, Autonomous Bodies, private entities or trusts registered under companies act or other relevant acts shall only be considered.

2(b) The bidder should have a minimum 5 years of experience with design and/ or execution of building with Interior and architectural finishing work projects.

2(C) The bidder should have achieved an annual financial turnover of at least 60% of the Estimated Cost of the work bid cost in any one of last seven financial years (including current year, if opted by the bidder).

Note:-

(i) The bidder should enclose certificate of Turn Over from Chartered Accountant for last Seven financial year & audited balance sheet of the year which is considered by the bidder in criteria 2(c).

(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 give self declaration to deploy the machinery and equipment as specified in Schedule-III for the execution of this work.

2(e) 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= (AxNx3-B)

Where A= Maximum value of civil engineering work executed in any one year during the last Seven financial years(updated to preset Price level) taking in to account the completed as well as works in progress. However, the bidder may opt current year in the seven year assessment period (Annexure-IV).

N= Number of year prescribed for completion of the work of which bids are invited. In present case value of N shall be-1

B= Value, at present price level of existing commitments and ongoing works to be executed during "N" period (period prescribed for completion of the works for which the bids are invited)

Note:-

(i) Certificate from Chartered Accountant should be enclosed by bidder clearly indicated maximum value of Engineering Work in one Financial Year.

(ii) The present price level for turn over and cost of completed work for the previous year's value shall be increased @ 10% every year, Arithmetically.

2(f)Bidders Net Worth: Minimum Net worth of bidder should be Rs. 10.00 crores RsTen crores) in any of the last 7 financial year .. Thesupporting document in the form of CA certificate and Audited balance sheet shall besubmittedbythebiddersfor establishing theirnetworth.

2(g) The bidder should have a minimum 5 years of experience with design and/ or execution of building with Interior and architectural finishing work projects. In case of JV or consortium, the experience of either partner shall be considered. 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(h) The bidder should have completed the construction work with interiors and all services and amenities of at least one Resort / Hotel project with three star amenities in last ten years.

Note:-

(i) The bidder should enclose completion certificate and photographs of completed/ executed works.

2(i) Litigation History:- Bidder should provide an accurate information on any litigation or arbitration resulting from contracts completed or under execution by him over the last Seven years. The maximum value (updated at the present price level) of disputed amount claimed in the litigation/arbitration resulting from contracts executed in last five years shall be deducted from the calculated Bid Capacity of the bidder. The details shall be furnished in Schedule VI.

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

a) Project Head with a recognized degree in B Tech (Civil) or equivalent from a reputed institute and at least Ten (10) years of total professional experience
b) Two Nos. Civil Engg with experience of minimum 03 years;
c) Electrical Engineer with experience of minimum 03 years.
d) Safety Engg. With relevant qualification and with experience of minimum 03 years.

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

Specialized Agencies: The tenderer must associate himself with agencies of the appropriate eligibility for each of specialized nature of items / work listed below individually. Such works shall be got executed only through associated agencies specialized in these fields. The tenderer whose tender is accepted shall indicate the name(s) of his associated specialized agencies those fulfilling the eligibility criteria laid down below after award of work and at least 30 days before commencement of such items / work but within 90 days of award of work whichever is earlier for the approval of the JDA of that component, whose decision shall be final and binding. If the tenderer, having valid electrical license if applicable for E.I. works, himself fulfills the eligibility criteria laid down below for associated specialized agencies, then the tenderer shall not require to associate with himself the associated specialized agency.

It shall be the responsibility of main contractor to sort out any dispute / litigation with the Specialized Agencies without any time & cost overrun to the Department. The main contractor shall be solely responsible for settling any dispute / litigation arising out of his agreement with the Specialized Agencies. The contractor shall ensure that the work shall not suffer on account of litigation/ dispute between him and the specialized agencies / sub- contractor(s). No claim of hindrance in the work shall be entertained from the Contractor on this account. No extension of time shall be granted and no claim what so ever, of any kind, shall be entertained from the Contractor on account of delay attributable to the selection/rejection of the Specialized Agencies.

2 (I) **Scope of work** :The qualified bidder has to prepare and submit conceptual drawing with minimum facilities as under (The design and amenities should be of minimum 3 star category):

Construction of 50 bedded Satellite Hospital, (G+2) complete with detailed designs and drawings ,structural works, civil works and finishing works, MEP works, Interior works, and other development works with following minimum requirements:-

A) Ground Floor:-

1. Reception
2. Registration Desk
3. Waiting Loungeon each floor
4. Common Toilets on each floor
5. Housekeeping Room on each floor
6. Passenger/Stretcher Lifts -2 nos (13 passenger capacity each)
7. Service Lift- 1 Nos
8. Guard Hut
9. Waste Collection Room

10. Oxygen generation Plant required for 50 bedded hospital
11. Electric Sub Station
12. Land escaping and parking place development within the premises

B) First Floor & Second Floor

1. Common passages

2. Service counter on each floor

3. Common Toilets

4. Service counters on each floor

5. Waiting Lounge on each floor

6.Fire Staircase

Note:-

(I) The present price level for turnover, cost of completed work & disputed amount of similar nature, the previous years value shall be given weightage of 10% per years as follows:-

	Financial Year	Factors
(a)	**For current year**	**1.00**
(b)	**For First last financial year**	**1.00**
(c)	**For second last financial year**	**1.10**
(d)	**For third last financial year**	**1.21**
(e)	**For fourth last financial year**	**1.33**
(f)	**For Fifth last financial year**	**1.46**
(g)	**For sixth last financial year**	**1.60**
(h)	**For seventh last financial year**	**1.76**
(i)		

3. 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 works executed in the last seven years in Schedules-II.
(c) Certificates from the concerned Engineer-In-Charge in support and verification of the information furnished in Schedule-II.
(d) Self declaration regarding machinery and equipment required for deployment, as detailed in Schedule-III.
(e) Information regarding details of maximum value of civil engineering works executed in any one year during the last seven years taking into account the completed as well as works in progress in schedule-IV.
(f) Information regarding existing commitments and ongoing works to be completed in schedule-V.
(g) Information regarding details of litigation or arbitration contracts to be furnished in schedule-VI.
(h) Calculation of Bid capacity in schedule-VII.
(i) Self declaration as per Annexure I.
(j) Details regarding evaluation criteria in schedule-VIII.

Note:- These schedules are mandatory to fill by the bidder, failing which the information be treated as NIL.

4. Important:

(a) The bidder must ensure that all the information required in the Document is furnished by him completed 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 self-declaration that the information furnished in schedule I to VIII 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(i) or is not in accordance with procedure specified in para 1, or is not accompanied with bid security, copy of GST registration, proof for deposition of bidding document fee, RISL processing fee, Annexure "B" (RTPP Act/Rules) is mandatory to be fulfilled & signed with sealby the bidder and registration of contractor in required category it would be liable for rejection.

(II) Furnish of incorrect or concealment of any information required in the bid documents would render the bid liable for rejection.

(III) The bidder shall prepare bid in the digital/ electronic mode for uploading on e-procurement portal in the format/type of file specified in evaluation qualification criteria" all the documents uploaded should be digitally signed with DSC of authorized signatory, deemed as all the pages of the uploaded documents are signed."

(IV) The self-declaration and annexure "B" enclosed by the bidder regarding qualifications of RTPP Act, 2012 and Rules, 2013 along with bid documents, should be signed by the participating bidders before uploading bid documents otherwise the bid will be rejected as per officer order No. 194 dated 06.09.2022.

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 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 (minimum 51%) 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 partners alone, should fulfill the Technical Criteria Similarly Any one of the partners alone, should fulfill the Financial Criteria. For rest of the eligibility criteria, qualification 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 all work in hand of both 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. 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.
j. 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.
k. The experience certificate will be issued as per percentage of the shareholders defined in JV agreement of the two partners.

EXECUTIVE ENGINEER ZONE-11
JAIPUR DEVELOPMENT AUTHRITY
JAIPUR

SCHEDULE-I
FINANCIAL RESOURCES AND CAPABILITY
(Reference clause 3(a)

1. Name of Bidder:-

2. Total financial turnover achieved by the bidder in the last seven financial years;

S.No.	Year	Turnover
(i)		
(ii)		
(iii)		
(iv)		
(v)		
(vi)		
(vii)		

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 tendering 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.
Date:

SCHEDULE-II

(Reference clause 3(b)& 3(c)

DETAILS OF QUANTITIES OF WORKS EXECUTED DURING LAST FIVE FINANCIAL YEARS

S. No.	Name of Works (with agreement No. & Date)	Client	Place (district/state)	Financial Year	Principal Items of workAs per 2(a)

Note:- Certificates from concerned Engineers-in-charge should be enclosed in support and verification of the above statement.

Date:

SCHEDULE-III
(Reference clause 3(d)

Self Declaration

I/We……..Proprietor/Partner/ Authorized signatory of M/s……under take the oath that I/We will deploy the machinery and equipment listed below as and when required in the execution of this work.

S. No.	Name of Machinery	Minimum Requirement	Availability	
			Owned	Leased
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

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

Signature of Bidder

Note:- This self-declaration is mandatory to be signed by the bidder failing which the bid shall summarily be rejected without asking any clarification.

SCHEDULE-IV
(Reference clause 3(e)

DETAILS OF MAXIMUM VALUE OF CIVIL WORKS EXECUTED IN ANY ONE YEAR DURING LAST FIVE YEARS.

FINANCIAL YEAR IN LAST FIVE YEARS	COST OF WORK EXECUTED IN FINANCIAL YEAR

SCHEDULE-V
(Reference clause 3(f)

DETAILS OF EXISTING COMMITMENTS & ON GOING WOERKS 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 tender	Likely date of completion of balance work

SCHEDULE-VI
(Reference clause 3(g)

DETAILS OF LITIGATION OR ARBITRATION CONTRACTS

S. No.	Name of Works (with agreement No. & Date)	Client	Work Order	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

SCHEDULE-VII
(Reference clause 3(h)

BID CAPACITY

1.	A= Maximum value of civil Engineering works Executed in any one year during the last Seven 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 are invited	1	
3.	B= Value, at present price level of existing Commitments and ongoing works to be Completed during the next N Period.	……Lacs	Certified details enclosed at Page No…….

Bid Capacity= A x N x 3-B

= ……Lacs

Details Regarding Evaluation Criteria

Name of work :-

S. No.	Item	Minimum Requirement (As per Bid)	Remark	Year	Qty.	Page No.
1	Copy of GST Reg. Certificate					
2	Copy of Registration certificate					
3	1. Proof of Bid Security deposition 2. Proof of bidding document cost deposition 3. Proof of RISL fees deposition.					
4	The bidder should have completed/ executed "Similar work" in the last 5 financial years (including the current year, if opted by the bidder) as under: One work costing not less than Rs. 10.00 crore; or Two works each costing not less than Rs. 7.00 crore; or Three works each costing not less than Rs. 5.00 crore					
5	The bidder should have completed at least one work ofconstruction of independentlike Hospitals/premium residential buildings/hotels/guest houses/buildings related to hospitality with Interior& furnishing workin last Seven financialyears.					
6	The bidder should have achieved an annual financial turnover of at least 60% of the Estimated Cost of the work bid cost in any one of last sevenfinancial years (including current year, if opted by the bidder)					
7	**Bidders Net Worth:** Minimum Net worth of bidder should be Rs. 10.00 crores (RsTen crores) in any of the last Seven financial year. Thesupporting document in the form of CA certificate and Audited balance sheet shall besubmittedbythebiddersforestablishing theirnetworth.					
8	The bidder should have a minimum 5 years of experience with design and/ or execution of building with Interior and architectural finishing work projects. In case of JV or consortium, the experience of either partner shall be considered. 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.					
9	The bidder should have completed the construction work with interiors and all services and amenities of at least one Resort / Hotel project with three star amenities in last ten years.					
7	The bidder should give declaration to deploy the machinery and equipment as specified in schedule-III, for the execution of this work. Duly Self attested.					
8	Bid Capacity (AxNx3-B) Here A is Maximum value of civil engineering work executed in any one of last 7 financial years. N is number of Years Prescribed for completion of the work. B is value at present price level of existing commitments and ongoing.					
9	Decleration in support of information finished by bidder in Annexure-I					
10	Schedule-VI (Details of Litigation).					
11	Signed Annexure "B"(RTPP Act/Rules)					

Note:- This sheet must be prepared and submitted by the bidders.

Attested photo of the bidder

Self Declaration

I/We……Proprietor/Partner/Authorized signatory of M/s…….under take the oath that the information furnished by me/us in schedule I to VIII of the assessment Bid for……is correct to the best of my/our knowledge. If any information id found to be incorrect JDA has right to reject the Bid and to take action against me/us as per rules.

……..

Proprietor/Partner/Authorized signatory

M/s……

……

Note:- This Self Declaration is mandatory to be signed by the bidder failing which the bid shall summarily be rejected without asking any clarification.

SECTION-IV

PROCURING ENTITY'S REQUIREMENTS

BRIEF PARTICULARS AND SCOPE OF THE WORK

Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur

1. The project siteislocated approx. 16 km from Jaipur Railway Stationand approx. 25 km from Jaipur Airport, at Jaipur-Ajmer Highway, Balmukundpura (Ajmer Road), Jaipur.

2. The work is to be executed on Engineering, Procurement and Construction (EPC) Mode basis. In EPC Mode, the architectural and engineering design anddrawings for the work, Procurements and construction including interior andfurnishing shall be done by EPC contractor. Necessary approvals will be given bydepartment.

3. ***The total plot area is about 10000.00 Sqm.***

   Contractor shall be required to do allcivil,electrical,horticultureworks,allexternaldevelopmentworksinplotarea i.e.C/OInternalroadsandlanes,footpaths,parkingareas, Anti termite Treatment,Maingatesincluding its gate building structure, boundary wall of campus, common areas,water supply lines, sewers lines, storm drains, U.G water tanks and variousPump rooms with pumps, STP, Parks and landscape gardens, street lighting,High masts and other lighting, power back up and their all equipment's, firefighting lines and system, cable trenches and cable laying in trenches andunderground conduits/ducts including feeder pillars & related items, D.G sets,Internal EI with wiring, CCTV, water channel bund, horticulture developmentandallothercivil,MEP,Horticulturerelatedincidentaldevelopment works, open parking, landscaping ,terrace floor ,Retaining wall construction, interior and furnishing works as per tender drawings andalso detailed working drawings, if any as per requirement of work, issued byJDAduringexecutionofworkandalsoasperdetaileditemsand specificationselaboratedinthisbiddocument.

4. The scope of Construction 50 bedded Satellite Hospital,

Jaipur (G+2) with complete withcivil, development, MEP and furnishing works underthiscontractshallalsoinclude, Detaileddesignanddrawingsforproject w.r.t architectural, civil, structural works, also MEP works i.e. Internal EI withwiring, fan–fittings,lift, HVAC,Firefightingand Alarm, CCTV,EPABX, Dataand LAN, UPS, Solar PV power generation, plumbing, sanitary and all otherCiviland Electricalservicesinthebuilding, landscaping works, all finishing details, etc. as per tender drawings and also detailed working drawings, if anyas per requirement of work, approved by JDA during execution of work andalso as per detailed specifications elaborated in this bid document shall berequiredtopreparedbycontractor,getthemapprovedfromdepartment,execute and complete the work in all respects and hand over to Engineer- in-charge.

Note: All the excess earth is to be disposed off at contractor's cost with all lead and lift.

5. RelevantIScodes,NationalBuildingCode2016,andotherstandardspecifications shall be followed in general except otherwise mentioned in biddocument.

   I. ThedetailedDesignBasisReport(DBR),TechnicalSpecifications,conceptual drawingsand conditions for each function like Civil, Electrical,Plumbing, Fire, STP, External Development,Landscape,Streetlighting,Lift,furnishingetc. areelaboratedin thistenderdocument.

   II. The Design Basis Reports are the minimum standards that the constructionagency has to fully comply with. If there is any change or departure fromDBR/s,the sameshall begotapprovedfromJDA.

6. The tender is for theGround+ 1 Floors 50 bedded Satellite Hospital***(structure will be designed for + 4 Floors***) asperrequirementsalongwithouter development,interiorand

otherrelevantservice.

7. Thebriefscopeofworkis asfollows:

(i) Architectural,Structuredesigning,andconstructionoftheb uildingsasmentionedandasperbuiltup areasgiven below:

Sl.No.	Description	Approximate Built-up Area(to beconstructed as per details given inthisTenderdocument)
1.	50 bedded Satellite Hospital(Ground floor, & 1st floor)Mumty,Watertankandliftroom, etc.	***5350.00 Sqm***
2.	Sitedevelopment	Outerdevelopmentofcompleteplotar eaincludingcompoundwalls, Retaining walls, Parkingand gatesasperdesigns.

3.	Miscellaneous&Allied WorksaspernormsofNBC2016andmentionedinthis document: i) Detaileddesignanddrawingsforthisbuilding. ii) Architectural,civil,structural,finishing,interior andfurnishingworks iii) Plumbing &Sanitary. iv) ExternalWaterSupply& Sewerage,StormWaterDrainageSystem, a. RainWaterHarvestingincludingRechargeWells. v) Elevators/Lifts. vi) Electrical Services, HT substation equipment's, LT distributionsystem,DGsets,risingmains,UPS,aviationobstruction lights. vii) Interior,Furnishing,machinesandequipments. viii) FireFighting &FireAlarmsystem. ix) Water supply& Pumps. Gas linesandgasbank. x) Site Development & Landscaping including roads, Foot paths,Walkways, sports facilities, C/W with gates,guardrooms,Horticulture works &irrigationsystem. xi) InternalElwithwiring,fan–fittings, HVAC,CCTV,EPABX,Data xii) Undergroundwatertank withpumphouseetc. xiii) External Lighting, , Signage, works CCTV, BoomBarrier, Bollard. xiv) ExternalService Connections. xv) Arrange conferences, site visits, inaugural and handing over functions,holdingmeetingsetc. xvi) Anti termite Treatment
4.	Alliedservicesas perrequirementsof serviceproviderorregulatorybody.

(ii) Thegeneralparameters(subjecttochange)ofArchitecturalDesigningare:

Description	Parameter

TotalPlot Area	10000.00 sqm
Hospital Building	Multi-StoriedBuildingwithRCCframed/prestressedconcrete construction using traditional form work includingfoundationonRaft/pilesasrequired. *The structure design will be for G+4 floors.*Superstructure/finishing/interior/furnishingworksasperspecifications/images/conceptual drawings approvedbyJDA,Jaipur.Heightofeach floor asperrequirement andconceptualdrawings approved.
Landscaping outerdevelopment &Horticulturework	The scope of work includes open parking, landscaping, outer Development,horticultureworkincludingirrigationsystemasmentioned inthisdocument.
Interior and Furnishingwork	The scope of work includes furnishing work including allinterior,furnishes,etc.tomake the completebuildingandfacilitiesfunctionalwithdesignandspecificationsasmentioned in this document.

(iii) The Land plan forming part of this NIT are indicative only. There can bechanges in the scope of work as per requirement of JDA, Fire Services etc.Agency shall carry outsuch changes which occurdue to Buildingbyelawsor statuaryrequirements.

(iv) Thefollowing studies aretobeconducted initiallybythe agency:

a. Topographicalsurvey,Geo-technicalinvestigation

b. LocalAreaSurveyfortheservices(electrical,plumbing,Telecomand.Otherrequiredservices)

c. SufficientPhotographs & Videography ofwholecampus (in four copies)forrecordpurpose

(v) Design of all civil, electrical & mechanical and horticulture services theirintegrationandinstallationandcommissioning.Developmentofarea,socialinfrastructure,boundarywall,internal roads, Street lighting, and other amenities etc. required forfunctioningofHospitalincludingfollowingtheinstructionsofJDA/localAuthorityetc.for connectionsofinternalroadswithpublicroads.

(vi) TheAgencyisrequiredtocompletetheprojectonEPCbasiswithincontrolledarchitecturalnormsasmentionedintheScopeofWork,Technical Specifications & Architectural Drawings including development ofentiresiteareaupto& includingthe boundarywall .The scope of work is to be carried outcompletein all respectincluding furnishingandservices. Ratesquoted bytheAgencyshallbeconsideredforentirescopeofworkwhichincludesall activities/workstarting from the given conceptto completion till handingoverofcompletedprojectinfunctionalstatefromall perspective.Thequoted amount is inclusive of defect liabilities period of 5 years for structureand services which includes electrical installations, plumbing, firefighting,lifts, machines and equipment etc. after acceptance ofproject as complete and functional, by the competent authority any damagein services would be borne by the Agency till the defect liability. The AgencyisrequiredtoconnectalltheexternalserviceslikeWaterSupply,Sewerage, Drainage, Electric Supply, LAN/WAN, Telephone Lines etc. tothe main lines of the authorities/service providers like PHED/ Nagar NigamJaipur / BSNL or any other agency and this shall be considered as integralpart of Scope of work and deemed to be included in the quoted price of theagency. The Agency will obtaining all mandatory approvals for functionalityand Completion, fire NOC, PHED NOC, Lift NOC, JVVNL or any other approvals required to declare all assets eligible forbringingitinuse.

It shall be deemed that the Agency has satisfied himself with the nature andlocationofthe work,generalandlocalconditionsandparticularly thosepertaining to transport including restriction of movement of traffic / vehiclesetc.,handling,availability and storage of materials,availability oflabour,weather conditions at site and general ground/sub soil conditions. Agency isexpected to quote their rates accordingly and nothing extra shall be payableforanyreason/swhatsoeveritmaybe.

JDA shall bear no responsibility for the lack of such knowledge and also theconsequences thereof to the Agency. The information and site data shown inthedrawingsandmentionedinthetenderdocumentsarefurnishedfor general information and guidance only. The JDA in no case shall be heldresponsible for the accuracy thereof or/and deductions, interpretations orconclusionsdrawntherefrombytheAgencyandnoclaimshallbeentertained whatsoever on this account; if the site conditions/information isdifferent or otherwise incorrect. It will be presumed that the Agency hassatisfied himself for all possible contingencies, situations, bottle necks andactsofcoordinationwhichmayberequiredbetweenthedifferentagencies.

Neitheranyhindranceshallbeentertainedbecauseoftheseconstraintsifsooccursatanystage.

(vii) Thescopeofworkincludesarchitecturaldesignwithinthecontrolsof Architectural parameters given in this document or prescribed later by JDA,Structural Design, and design of all required services, obtaining permissionfor Tree Cutting / or Translocation of Trees required as per site conditions.TheworkistobeexecutedonEPCbasis.Thescopeis inclusiveoftopographic survey, survey for locating and executing service connections,Geo-technical investigation and all Preparatory / Ancillary works. The cost oflabor, material, tools and plants and machinery required for execution of thewhole project as per approved Layout plan & detailed design and drawings isinthe scope ofthis workshall be bornebythe bidder.

8. TheAgencyisrequiredtoappointdesignandexecutionteamonsiteforpre andpostconstruction works.

RequirementofTechnicalRepresentative(s)andRecoveryRates:

Applicableonlyforpre-construction andconstruction Phasework.

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.	10 yr (having experience of one similar nature of work)	B Tech or Equivalent	Rs. 100000/- per month
2.	Project / site Engineer	2 No.	5 Yr.	Civil Graduate Engineer or Diploma Engineer	Rs. 50000/- per month
3.	Quality Control Engineer	1 No.	5 Yr.	Civil Graduate Engineer or Diploma Engineer	Rs. 50000/- per month
4	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.

9. Contractorhavetoestablishmaterialtestinglabsandkeepmini mumconstructionequipmentas perappendixIandappendixII.

10. The Agency shall hand over the assets after completion of work with as builtdrawings,servicesrouteplans,Maintenancemanuals,War rantees/Guarantees or any other document required by the JDA for maintaining theseestablishments.

11. Electrical & Mechanical Works: Details ofE & M works are given in of thetenderdocument.

12. Samples of the materials of approved make or otherwise shall be got approvedfromthe JDA beforeuse inthework.

13. Shifting /Removal of Services and Statutory Approvals: Contractor shall take allnecessary measures required to be taken to remove any live or dead servicelines running through the plot area, cutting/shifting of tress etc, without anyextracost.Aftercompletionofthe workand commissioningofbuilding(s)along with services, he shall get completion certificate from local body, NOCfrom fire department and any other statutory approval related to building forhandingoverthe assets.JDA and clienti.e. JDA shall extentnecessarysupport,asperstatutoryrequirements,tothec ontractorfortheseapprovals.

14. Topographic Survey: Contractor is advised to conduct topographical survey ofthe entire area land and all other services like roads, paths, drains and waterbodiesarelocated/passesout.Howevertopographicalsur veyoftheconcernedareaswherebuildingsandroadsandotherd evelopmentfeatures/items are to be located is attached with bidding documents for preknowledge of topography of the site. Contractor has to verify authenticity ofattached topographical survey himself. No claim for extra /additional paymentsowingto/aboutthechangeinsiteconditionshallbeen tertained infuture.

15. Contractor shall prepare and submit hard and soft drawings for structural steelwork based on latest software and detailed layout drawings for all civil and electrical services, dulysupportedwith designasrequiredbyengineerincharge.

16. Contractor shall submit item wise detailed measurements, for record and otherpurposes.After completion of the work contractor shall submit as built drawingsof all civil, electrical and mechanical services in Auto CAD including five setsofcoloureddrawingsonAO/A1size.

ESTABLISHINGSITELABORATORYANDTESTINGOFMATERIALS

Equipment's for conducting necessary tests (as per applicable codes and standards)shall be provided and installed at site in the well-furnished site laboratory by theagency at his own cost.The following laboratory equipment should be in general orasand when requiredbesetup atsite laboratory:-

Sl.No.	Equipment	Numbers
1.	100MTcompression testing machine, electrical-cum-manuallyoperated)	1
2.	Slump cone,steelplate,tampingrod,steel scale,scoop	6
3.	VicatApparatuswithDeskpot	2
4.	Pumpsandpressuregaugesfor hydraulic testingofpressurepipes	2
5.	Weighingscaleplatformtype100Kg capacity	1
6.	Sets of sieves of 450 mm internal dia for coarse aggregate[100 mm, 80 mm, 40 mm; 2 mm; 12.5 mm,10 mm; 4.75 mmcompletewith lid and pan]	2
7.	Sets of sieves of 20 mm internal dia for fine aggregate [4.75mm; 2.36 mm; 1.18 mm; 600 microns; 300 microns & 150microns,with lid and pan]	2
8.	Sieve Brushes and sieve shaker capable of 20 mm and 300mmdiasieves,manuallyoperatedwithtimingswitchassembly	2
9.	Cubemould size70mmx70mmx70mm	10
10.	Cubemould size 150mm x150mmx150mm	12
11.	Electronicbalance 600gx0.1g.,10kg and50kg	2
12.	Physicalbalanceweightupto5kg	2
13.	Digitalthermometerupto150 oc	2
14.	Measuringjars 100ml,20 ml,500ml	4Noseachsize
15.	Gauging trowels 100 mm & 20 mm with wooden handle	6
16.	Vernier calipers 12‖& 6‖ size	3 each
17.	GI tray 600 x 450 x 50 mm, 450 x 300 x 40 mm, 300 x 250 x 40 mm	3 Nos. each
18.	Electric Motor mixer 0.25 cum capacity	3
19.	Screw gauge 0.1mm-10mm, least count 0.05	2
20.	Water testing kit	2
21.	Motorized sieve shaker	1
22.	Pruning Rods 2 Kg weight length 40 cm and ramming face 25 mm2	2

23.	Mortar Cube vibrator	1
24.	Iron Weight of 5 kg, 2 kg, 1 kg, 500 gm, 20 gm, 100 gm	2 each
25.	Brass Weight of 50 gm, 2 gm, 10 gm, 5 gm, 2 gm, 1 gm	2 each
26.	Measuring cylinder TPX or Poly propylene capacity 100 ml, 500 ml, 250 ml, 100 ml	2 each
27.	Wash Bottles capacity 500 ml	12
28.	Thermometers 1-100 degree centigrade / max. and Min/ Dry and wet withtable	4
29.	Hammer 1lb & 2 lb	2 each
30.	Distance metre (of 100 metre)	2
31.	Measuring tape (5 metre)	4
32.	Wheel Barrow	8
33.	Floor Brushes, hair dusters, scrappers, wire brush, paint brushes, shutter steel plat oil, kerosene with stove etc.	12 each
34.	Any other equipment for site tests as outlined in BIS codes and as directed by the JDA.	-

DETAILS OF MACHINERY AND EQUIPMENTS REQUIRED TO BE DEPLOYED

Sl. No	Equipments (Owned or Leased)	Numbers
1.	Buildershoist	1
2.	Centralized concrete batch mix plant of capacity 20 cum per hour (fullyautomatic with computer control)	1
3.	Excavatorcumloader(JCB3Dmodelorequivalent).	1
4.	Compressormachineminimum20CFMwithrock Breaker.	1
5.	DGset ofminimumcapacitiesof62.5KVA.	2
6.	Minibatching plant(6cum./hr.).	1
7.	Transitmixers.	2
8.	Concretepump	1
9.	NeedleVibrators.	6
10.	Screedleveler.	1
11.	PlateVibrator	6
12.	AutomaticRingmakingmachine(Reinforcement)	2
13.	Dumper/Tipper	2
16.	Powerdrivenearthrammer(Soilcompactor).	2
17.	Totalstation.	1
18.	Watertanker(Minimumcapacityof5000liters)	6
21.	Centrifugalmonoblockwaterpumpminimum capacity2HP	10
22.	Roadroller8to10tons	1
23.	Drillingmachine	2 Nos.
24.	Steelshutteringwith necessaryprops	5000sq.mt.
25.	Laptop / Desktop Computers with latest version ofMS windows &office & (All in one with stabilizer) & colour inkjet printer (A3) for JDAsiteoffice.	2 Nos.
26	Software- AutoCADlatestversionforsiteoffice	2 Users
27.	InspectionVehiclesfor JDA	1 Nos.

28.	Any other machinery required for completion of the work asperdecision ofJDA.	As per Actualrequi rement

Note:

1. Theabovelistisonlyindicativeandnotexhaustive.The Biddermaybe required to deploymoreT&Pasperrequirementofwork.
2. Alltheaboveplants&equipment'saretobedeployedasandwhenrequiredorasdirected byJDA.

Section-V

DESIGNBASISREPORT

1. STRUCTURALWORK

The basic Design Considerations shall be followed for structural design. All building shall be ofRCC framed structure constructed with traditional form work.Prestressed concrete designsmay also be used at some places as per design. The height of building is upto5 Floors inadditiontoonebasementandGroundFloor.Forheightofvariousfloorsandbuildingconceptualarchitecturaldrawingsshall bereferred.

Structuraldesign:

Themainconsiderationsfollowedforthedesignofstructureare:

a) Structuresafetyand stability.
b) TomeetthedemandsofaestheticsconceivedbytheJDA.
c) Availabilityofmaterial,equipmentandexpertise.
d) Constructabilityandeaseofmaintenance.
e) Durability.
f) Economy.

DesignApproach:

i) StructuralModelling:Three-dimensionalmodelofeachbuildingwillbegeneratedusingE-Tabssoftware.Alltheshearwalls,slabswillbeidealized as shell element and beams will be idealized as Beam Elements.Thestructurewillbeanalysedanddesignedforallpossiblecombinationsof gravity loads (dead and live loads), and lateral loads (earthquake loadandwindloads).Fatigueeffectsofpersistentcyclicloadsarenotanticipatedtherefor eignored,if any.

ii) Foundation System: Raft foundation may be adopted below the Tower Ground+4 Floors.. The raft/piled raft shall be analysedand designed by finite element techniques. It shall be modelled as plateelementsin SAFESoftware.

StructuralSystem:

All the Buildings will be designed with RCC monolithic slab and shear wallsystem. **RCC Slabs, Beams, Columns and Brick/AAC block wall will becastsimultaneouslybyusingTraditionalformworksystem. All building will be designed in accordance with** the relevant Indian Code ofPracticefor civil works viz.IS:456:2000,IS875,IS1893:2016,IS4326-1976,IS-

13920:2016,IS 16700:2017 etc. Prestressed concrete designs may also beused at some places as per design. Final approval must be taken from JDAwithvettingfromNIT orIIT

All thePermanent LoadshallbeasperthefollowingISCodes:

i) IS:875(PartI)– 1987

ii) IS:875(PartII) –1987

iii) IS:875(PartIII) –2015

The latestversion/amendmentofBIS codeshallbeapplicableinallcases.

SeismicAnalysis &Design:

3-D analyses shall be carried out using E-Tab software. Floor slab and allconcrete walls shall be modeled as plate/shell elements. Any other analysisrequired for design validation by proof checking institution/agency, shallhaveto be alsodone asrequired.

Ductilityand Durability:

Besides the strength to ensure durability of structure, minimum Concrete MixofM25will be usedfor FoundationsandFloor (slab/beam)system. M25grade of concrete for walls/columns confirming with relevant IS codes shall beused. Water connected units will be of M 30 grade. Higher grades of concretemaybe usedifrequiredfromdesign considerations.

SteelReinforcement:

Fe500DGrade(TMT- bars)conformingwith IS:1786to beused.

a. DesignStandards:

All the relevant BIS codes & specification are to be followed. Some of the importantcodesarelisted below:

a) IS: 456:-2000,CodeofpracticeforPlainandReinforced Concrete.

b) IS: 875(Part-I,II),Codeofpracticefor Designloads(otherthanearthquake)

c) IS: 875 - 2015 (Part- III), Code of practice for Design loads (other thanearthquake)

d) IS:1893:2016 (CriteriaforEarthquakeResistantDesignforStructure)

f) IS:4326:1993(EarthquakeResistant Design&ConstructionofBuilding)

g) IS: 13920-2016 (Ductile Detailing of Reinforced Concrete StructuresSubjectedtoSeismicForces)

h) SP:16 (DesignaidstoIS:456)

i) SP:34 (ConcreteReinforcement&Detailing).

j) IS: 16700: 2017(CriteriaforStructureSafetyof TallConcreteBuildings)

2. ELECTRICAL & MECHANICAL WORKInternal ElectricalInstallation(IEI)

Wiringshall be done inrecessed ISI rated PVC conduitwith FRLSmultistrandcoppercable.Modulartypeswitch,socket,fanregulator,T.V.&telephonesocketoutlet withGIboxanddoubledoor MCB/DBshallbe used.

Design ofwiring shall be based on relevant ISCodes in accordance withLoadingasperNBC.

Sufficient light points to be provided in various area to meet illumination levelas per IS 3646 (Part-I) 1992 with up-to date amendments.Lightingdesignshall be adoptedto ensure illumination level asperIS 3646 and also meetsthe LPD (light Power density) as specified by relevant ISCodes in accordancewith Loading as per NBC specification. Final approval must be taken fromJDA.

Recommended Values of Illumination as per BIS : 3646 (Part-I) in coherencewithNBC 2016.

S.No.	Area	Illuminance In Lux
1.	EntranceHalls,Lobbies,Reception	200
2.	WaitingRooms	150
3.	InquiryDesks	300
4.	Gatehouses	200
5.	LiftLobby	150
6.	Corridors,Passageway,Stairs	100
7.	Escalator,Travellators	150
8.	ConsultingRooms	300
9.	TreatmentRooms	500
10.	Rest Room	150
11.	MedicalStore	150
12.	Changing Locker and Cleaner Room, Clock rooms,100Lavatories	100
13.	Canteens,Cafeterias,Diningroom,MessRoom	200
14.	ControlRooms	300

15.	MechanicalPlant room	200
16.	ElectricalPowersupplyanddistributionRoom	200
17.	StoreRoom	100
18.	GeneralOffice	500
19.	Library	300
20.	SmallRetailShops	500
21.	Laundries	300
22.	AssemblyHall	300
23.	Auditorium	100
24.	Bank /Postoffice	300
25.	ConferenceHall/ MeetingRoom	500
26.	Workshop	300
27.	ReligionPlace	150

REFERENCEBISCODE

S.No.	ITEM	BISCode
1.	SteelConduit	IS:9537Part-II(Medium)
2.	FRLS PVC insulated flexible (Multi-Stranded)copper conductorwires	IS:694-1990
3.	M.C.B.s	IS:60898:Part-12002
4.	Phenoliclaminatedsheet	IS:2036-1974
5.	C.IJunctionBoxes	IS:2667
6.	PVCJunctionBoxes	IS:3419
7.	MSBend, coupler&elbow	IS: 2667
8.	PVCBend, coupler&elbow	IS:3419
9.	Modular typeSwitches (6A/16A)/ bell push	IS:3854-1997
10.	Modular type Three / Six Pin Socket Outlet(6A/16A)	IS:1293-2005
11.	PianotypeSwitches(6A/16A)/ bellpush	IS:3854-1997

12.	Piano type Three / Six pin socket outlet(6A/16A)	IS:1293-2005
13.	Piano step type fan regulator double moduletype	IS: 11037-1984
14.	MetalBoxes	Galvanized as per IS:277asamendedupt othedateof tender.
15.	GIBoxes	GalvanizedasperIS:277partclassP-1asamendeduptothedateoftender.
16.	TelephoneCable	ITD No. Specification WS-113C
17.	MCBtypesub-distributionBoardsofdouble door construction with hinged coverinfront	IS: 13032-1991

3. SUB-STATION&LTNETWORK

11/0.433 KV substations will be installed at

basement.Eachsubstation shall include:-

a) *Drytypecastresintransformer*
b) *HTPanel(VCB)*
c) *LTpanelwithwithdraw-abletypeACBs,MCCBs.*
d) *EssentialSupplyPanel.*
e) *Powerfactorimprovementpanel(Thyristerbased)*
f) *HTPanel(forringmain)*
g) *Earthing*
h) *Safetyrequirements*

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.*Schemeofsubstationsshallbe asperapprovalofJVVNL.*

General Guidelines for calculating total installed capacity of substations (KVA) aregivenbelow.

The electrical load shall be worked out as per NBC and Relevant IS code or as perJVVNLnormsandmustbegotapproved byJDA.

Building DiversityFactor–asper NBCAndRelevantISCode.

Power Factor for calculating KVA load = as per NBC and Relevant IS CodeTransformer LoadingFactor=asper NBC AndRelevantIS Code

FutureExpansion takenshouldbe 10%

Transformerstandbycapacityshouldbeminimum 33%

1. Commonservices

I. All Lifts
II. VentilationSystem(Liftlobby, Liftwell&fireshaft)
III. (Normal+Fire)
IV. Basement&Parking –Minimum1.25KW/1000Sq.ft(Lighting&Powerload)
V. FireFightingPumps
VI. WaterSupply Pump
VII. STP
VIII. CommonArea(StairCase, Lobby)Light&Power
IX. StreetLighting

Diversityfactor–0.8Power Factor– 0.8loadingFactor–0.8

The rating oftransformers shall not be less than 1500 KVA. Final approval must betakenfromJDA.

REFERENCEISCODE

11KVBreakerforMVDistributionnetworkshallbevacuumcircuitbreakertypewithminimum350 MVAshortcircuitbreakingcapacityandconformingtoIEC62271-100.

DistributionTransformer(11/0.433KV)shallbeeitheroiltypeorDrycastResintypedependingup onlocationofsub-station/Transformer.

Dry castResin typeTransformer(11/0.433KV)shallconfirmto IS- 11171-1985

/IEC 60726.

OiltypeDistributionTransformer(11/0.433KV)shallconfirmtoIS1180-Part-I(EnergyEfficiencyLevel-2).

AirCircuitBreakermouldedcasecircuitbreakershallconfirmIS-13947-1,MiniaturecircuitBreakershall confirmtoIEC/60947-2orIS8828.

4. EXTERNALSTREETLIGHTING

TraditionalDecorativeElectricalPoleswith green rated LED luminaries shall be used for road andpathway lighting, decorative poles, down lighters, bollard for park lights andother fixtures as per the design presented by contractor subject to approval byJDA. Road lighting & park lighting shall been resized through U.G. cables. Theroad lighting and park lighting shall be controlled through main feeder pillars &varioussubfeeder pillarstocover theroad &parklightingnetwork.

DESIGN

External lighting shall be provided confirming to IS 1944 (Part- 1& 2) 1970,National Building Code: (2016) & National Electrical Code-2005 with up to dateamendment.Final approvalmustbetakenfromJDA.

CLASSIFICATION

The classification of lighting installations in public thorough faresis based onvolume, speed and composition of the traffic using them. It is left to the localengineertodecideuponthe categoryofthe lightingforthegiven road.

5. GENERALPRINCIPLES

AimsofLightingInstallations

Circulation Pathways - The aim of lighting along pathways is to permit users ofthe pathways at night to move about with greatest possible safety and comfort,and to enhance the aesthetics of the building without compromising upon thevisual comfort of the residents and micro climate‘s living organism. Towards thisend consideration has to be given while designing the lighting on pathwaysjunctions and pedestrian crossings so that these can be easily identified bytheresidents:

The level of illumination of the junction should be substantially different from thenearby roads.TheJunctions may belightedbyeitherofthefollowingmethods:

a) Higherlevelofillumination– Incasethisschemeisadoptedthelevelofilluminationshould be150 percentofthatofthepathways.

b) Change in height of columns – The size of columns adopted at the junctionshould be higher than those adopted on roads as per relevant code andstanders.

6. GUIDELINESFORSPECIFICATIONS

Severalfactorscontributetogoodlightingandthoseareenumeratedforguidance in various parts of IS: 1994 * recommendations are made on thevarious components of design of lighting installation and those required detailedcalculations ofthe level and uniformity ofillumination on the Pathwaysurfaceand of glare. Several criteria may not be satisfied for want of data such ascharacteristicsofsurface,etctogetsomeideaoftheextenttowhichtheinstallationwouldperform,itmaybepreferabletomarkatemporarytrialinstallationofa few luminaries on astretchofpathways tobelighted.

Table 6 to 7 gives a summary of recommendations on the various types ofthoroughfares. These shall be used as ready reckoners, though for a detailedguidancereferenceshouldbe madetotherelevant partofIS;1994*

Note–Recommendations forGroupsC,Fand G lighting areunderconsideration.

TABLE-6LIGHTINGINSTALLATIONINPATHWAYS

S.No	Description	Std.tofollow
1.	AveragelevelofilluminationonroadsurfaceLux	8
2.	Ratiominimum/averageilluminationratio	0.3
3.	Transversevariationofillumination,percentPreferred	20
4.	TypeofluminariesPreferredPermitted	Cut-off Semi-Cut-off Non-cut-off
5.	Mounting height,m	7.5-9
6.	MaximumspacingofLuminariesheightratio	Cut-off=3 Semi cut off=3.5 Non-Cut-Off=4

Note: 3 – Mounting heights less than 7.5 m are undesirable except in special cases, suchasroadsborderedbytrees.

TABLE-7LIGHTINGINSALLATIONINPATHWAYS

S.No.	Description(1)	Remarks(2)
A	GradeSeparatedJunctions	
i.	Lighting by conventional streetlightingtechnique.	
1)	GeneralPrinciples	As in IS:1944(part-1 &2)-1970*
2)	Mounting height,M	10-12
3)	Luminaire	Cut-off
4)	Lightsources	LED
ii.	LightingbyHigh-mast lighting	
1)	MinimumServiceLevelValue(Lux)	30
2)	UniformityRatio$\frac{Emin}{Eavg}$	0.4
3)	Heightofmasts,m	Not lessthan20
4)	ChoiceofLuminaire	See IS:1944(Parts1&2)-1970*

Codeofpractice forlightingof publicthorough fares:part1Generalprinciples.

7. LIFTS

Provision of lifts in the Hospital will be kept as per National Building Code-2016 /Unified Building Bylaws considering no of floors, height of the building and speedof elevators which shall be submitted to JDA for approval before commencementof work. At least one lift be made barrier free as per Unified Building Bylaws &passengers capacity to minimum13 passengers for barrierfree lift.Buildingshouldhave atleastonebed lift.

8. FIREFIGHTING(WetRiser&Sprinkler)

Firefighting system for the Hospital 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 tosupply system.

II. HeavyDutyM.S‗C'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.

Hospital&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.Scodesandaccordingtounifiedbuildingbylaws Rajasthan.

Theproposedprovisionsareasfollows.

I. CentralizedStaticUndergroundstoragefiretanksasperNBCforHospital.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

Consideringlargearea,itisrecommendedtoprovidethefollowing minimum Fire Pumps (The number of Hydrants connected witheachsetoffirepumpswillnot bemorethan100)infirefightingpump room.

S.No.	DESCRIPTION	DISCHARGE	HEAD	LOCATION	QTY
1)	Mainfirepump	2850LPM	Residual headof 3.5 kg/cm2a tfarthest Point	Plantroom	1 Nos.
2)	Sprinklerfirepump	2850LPM		Plantroom	1 Nos.
3)	Jockeypump	180LPM		Plantroom	2Nos.
4)	DieselFire Pump	2850LPM		Plantroom	2Nos.
5)	Electricaloperated Water Curtain pump	2850LPM		Plantroom	1 Nos.

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,bothpumpssetsshall beinterconnectedatthedeliveryheaders.

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 centre tocentrespacingnotto exceedapproximately3.0meters.

iii. Uprightsprinklersshallbeprovidedforanyfalseceilingareasinlobbies/commonareaset c.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.

WaterCurtain System

Water Curtain System is proposed for the compart metallization of theBasements& Podiumsasperthefollowingdetails:

i)	Maximumareapercompartment/Zone	=	AsperNBC-2016
ii)	DesignDensityof eachNozzle	=	35- 40LPM/Meter
iii)	SpacingofNozzle	=	Max. 2.5MetersC/C

Provisionofwatercurtainpumpsandstoragesshalldependuponfinalapprovalrequirementsasstipulatedby LocalFireDepartment.

Firedetection&Alarm System:-

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/ Closestatusofallisolationvalveswithsupervisoryswitch.

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 HeadedSingleOutletGMLandingValveǁ conforming toType -Aǁ.
IS:12585	--	Hosetubing(Thermoplastic)
IS:854	--	Hosetubing,Globevalve, Stopcock & Nozzle
IS:636	--	Hose pipes rubber lined woven jacketed(RRL)&63 mmdia,conformingto type -Aǁ
IS:903	--	Thecouplingsshall beofinstantaneous [Branchpipe,nozzle,springlock type Couplingetc.
IS:15683	--	Portablefireextinguishers

9. MECHANICAL VENTILATION & SMOKE

EXTRACTIONDESIGNBASIS

ThesystemshallbeprovidedasperNationalBuildingCodeofIndia2016and,unifiedbuilding bylawsRajasthanand otherrelevantI.S codes.

Followingparametersshallbeadoptedformechanicalventilation(ifrequired)ofthe specific areas:

1.	BasementCarParking	
	i)NormalMode	6ACPH
	ii)FireMode	Additional6ACPH(Total12ACPH)
2.	ServicesRooms(LT&HT Room,PumpRooms	20ACPH
3.	TransformerRoom	ShallbecalculatedbasedonTransformerheatdissipation nor20ACPH which everis more
4.	STPRoom	30ACPH

Note:

Planning of liftwell, liftlobby &staircasepressurizationshallbeasperNBC2016ifrequired.

In calculation of pressurization, leakage area, open & close door consideration shall be as perlatestaddition ofASHRAE standard/NFPA/NBC2016 ifrequired.

15%safety marginshallbeconsidered inselectionofpressurizationfans.

In fire tower; all the staircases, lift wells & lift lobbies shall be mechanically pressurized inaccordancewithfireauthority'sapprovalifrequired.

Allthepressurizationsystemshallbedesignedasperfireauthority approvalifrequired.

SystemDescription:

BasementVentilation:

Allcommonareaslikecarparkingarea,sub-station,pumprooms,STPetc.shallbemechanicallyventilated.

Car Park ventilation system shall be designed to give at least 6 ACPH during normalmode and during fire mode additional 6 ACPH (total 12 ACPH in case of fire)proposedas perNationalBuilding CodeofIndia-2016andUnifiedBuildingbylaws.

The mechanical ventilation system shall comprise of axial fans for extraction ofnormalexhaustair/smokewiththehelpofexhaustduct&MSgrilles.Makeupair may be drawn from ramp and cut- outs which shall be suitably located. MS powdercoated louvers shall be provided at the inlet of fresh air and exhaust. If required,make up air fans shall be provided to supply fresh air through supply air GI duct &MS grilles. Make-up air shall be supplied at floor level i.e. 300 mm above the floorlevel having dropper from main duct by the side of column and exhaust air shall befrom ceiling level.

Both makeup & exhaust fan shall be axial flow fans and shall be installed in fanrooms. All exhaust fans (normal & smoke extraction) shall be fire rated suitable for 2hours fire rating at 250 degree Celsius Gravity louvers shall be provided at the outletof each fan to avoid reverse flow. The discharge of air and intake of fresh air ifrequired shall be through masonry / RCC / CC ducts of two hours fire rating. Theductshall bedesignedfor12ACPH.

Car parking normal mode fans will be operated automatically through CO sensorsand fire alarm system for smoke extraction in case of Fire. Manual operation shallalso be provided locally and remotely from a central location with visual indication ofstatus of fans. The maximum sound level of car parking ventilation system shallbe70 dB(A) at 1 meter from the fan room in case of normal operation. To achieve thedesired noise level in basement car parking area, fan rooms, ducts & plenums maybe acoustically lined. Multiple fans may be selected to achieve air flow, sound leveland maximum efficiency. Fans may also be selected as Vane Axial type for normalventilationsystemforbetterefficiency.

As per National Building Code of India (NBC) 2016, entire basement parking areashall be compartmentalized into various zones ofmaximum 3000 Sqm / Zone.Compartmentation will be done by water-curtains. Ventilation and smoke extractionofeachzone shall beindependent.

DesignParameters:

(i) Duct design:		
Max. flow velocity in ducts for ventilation inCar Parking (normalmode)	:	9.2m/sec(1800fpm)
Max. flow velocity in ducts for ventilationinCarParking (firemode)	:	12.2m/sec(2400fpm)
Maximumflowvelocityinductsforventilationinservicesareas(pumprooms,sub-station etc.)	:	9.2 m/sec-10.2 m/sec(1800 – 2000fpm)

Maximum flow velocity at ventilation grilles in carparking (normal mode) & services areas (pumprooms,substation etc.)	:	2.5/sec(500fpm)
Maximum flow velocity at pressurizationgrillesMaximumfriction	:	3.8 m/sec (750 fpm)1cmWG/100m run
ii) VentilationFan		
Max. fan outlet velocity for Normal mode fans(carparking,plant/pumprooms,&Max.fan outlet velocity for Normal mode fans(carparking,plant/pumprooms,&Max.fanoutletvelocityforfiremodefans(carparking,publiccareasmokeextraction& pressurizationfans)	:	10.2m/sec(2000fpm) 12.2m/sec(2400fpm)
Fan Speed	:	Notmorethan1450 RPM

Note:

All the normal mode fans shall be selected for maximum efficiency & minimumsoundlevel.

All fans shall be AMCA certified for air flow, sound and performance. Normalmodefansshall be notlessthan65%efficient.

All car parking ventilation & smoke extraction fans shall be selected for staticpressureat12 ACPH.

Allfans shallbeoperatedautomatically,manually locally andremotelyfromcentrallocation withvisualindicationofstatusoffans.

10. 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 Heavy Duty GI pipes with matching heavyDutyfittings.

(b) SewerageSystem

- CollectionandConveyance
- ConnectiontoexternalSewerageline
- SewageTreatmentPlant
- ReuseofTreatedWaterfromSTPforFlushing&irrigationwithin thecampus.

- Surplus Treated Water from STP to be taken up to near campusboundary as per direction of JDA for onward use in other areas to bedecidedbytheauthorities.
- SewageSystemof hublessC.I piping&fittings

(c) StormWater Drainage System

- Collectionand conveyance
- DisposaltoexternalStormWaterline.

(d) RainWater Harvesting

- ConstructionofRainwaterharvestingrechargingwellsasperrainwaterharvesting Manual/NBC
- Constructionofdesilting Chamber.
- Designasperrainwaterharvestingmanualconsidering90mmpeakhourlyrainfall.

(e) Internal PlumbingWorks

- Internalwater supplysystem.
- Soil,Waste, vent&Rainwaterpipes.
- Disposalto1st Manhole/stormwaterdrain.
- AllSanitaryFixturesandfittings.

ApproachforPlanning

Consideringthenatureofactivitiestobeconductedandthetypeofbuildingstobedeveloped,effortsint heapproachfortheplanningofvarioussystems, shallinclude thefollowingconsiderations:

- There shall be enough safe, clean and potable domestic water oncontinuousbasistoeveryuserofallthebuildings asperNBC2016.
- Efficient disposalfromtoilets/Wet areas.
- Quick disposalofrainwaterwithoutflooding.
- Nowastage/leakageofwater treatedor otherwise.

ImportantFactorsonPlanning

- To plan the systems in such a way asto minimize the energyrequirements.
- Tomaketheentiresystemefficientandcosteffective.
- To have proper operation and maintenance system, which could becontrolledcentrallyandefficiently
- TocreateminimumnuisanceanddisturbancetotheEnvironment.
- 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	Description ofOccupancy	OccupantLoad perNBC-2016	Water RequirementAsperNBC 2016		Flowto S.T.P.	
			Flushing	Domestic	Domest	Flushing
			LPCD	LPCD	%	LPD
1.	Residents ofHousing Units					
	4 bedroomdwellingunitandabove	7Persons/Unit	45	90	80%	100 %
2.	Misc Facilities(cuband services)	10 Sqm/person	20	25	80%	100%

NOTE:

The Water& sewage flow requirementwill bebasedoncalculationsforwater consumption indicated in Annexure P1. Water schemes and sewageschemestobe worked outaccordingly.

Capacitiesofundergroundtanks&sewagetreatmentplantstobeconstructedwill beas per detailsindicatedin Annexure P1

ASafety factorof10% willbeaddedinthetotalwaterrequirement.

STPCapacitywill be20 %morethanas workedoutabove asperEIAguidelines.

Source

Thesourceofwatershallmainlybefrom:

1) Municipalwatersupplyconnectionasmuchaspossibletomeetthe requirements,fromPHED dept. Rajasthan.
2) Augmentationfromboringtubewellsasperprevailingpracticeandafterobtaining thenecessarypermissionsfromalltheconcerned authorities.
3) ByrecyclingthetreatedeffluentoftheSTPforFlushingandhorticulturalpurposes.
4) Rainwatershallbeharvestedintheformofinfiltrationwells,to replenishtheundergroundwateraquifer.

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 indicatedin AnnexureP2.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.EmergencyconnectionfornormalpotableWatersupplyshallalsobemadetothissystem.

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 CastIronwithdiscofCF8Stainlesssteelwithnitrileseat,

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.

Special type of control valves like, pressure reducing valves (PRV) andSolenoid valves shall be provided as per requirement to control andRegulate the flow of water PRV's shall be provided at easily accessiblelocation,to enablerepair/maintenance.

NOTE:-

1) OHTankforFireasperNBC willbe provided on eachTower.
2) Capacities of OH Tanks for Domestic & Flushing Water will be decided as per requirement.

11. 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.Itis proposed toprovide STPtomeetthetotalrequirement.

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.

FinalDisposalofTreatedEffluent

The treated effluent from the Sewage Treatment plant shall be recycled forFlushing, Soft water and Gardening purposes etc. Surplus Treated Water fromSTP to be left near campus boundary, for onward use in other areas to bedecidedbyJDA.

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,havingapproximatet otalweight offrame andcover170-208Kg.

12. SEWAGE TREATMENT

PLANTRequirementsofSewageTreatment

Plant

There shall be a system for treatment and re-use of the entire sewagegeneratedin theprojectarea.

Accordingly, it is proposed that the external sewerage network shall collectthe sewage from all units, and flow by gravity /through sewage pumpingstationsforfurthertreatmentin theproposedsewage treatmentplant.

Sewage system plant will be designed as per prevailing guidelines of NBC2016 and proposed for buildings indicated inannexure P1 and as percalculationsindicated inannexureP2

SewageTreatment

Sewage treatment is achieved by the initial physical separation of solidsfromtherawwastewaterstream,afterwhichtheremovalofdissolved/suspended biological matter takes place. The main criteria fortreatment of domestic effluent are its bio degradability, made possible bytheexistenceofabalanceofnutrientsforthe bacteriaandcharacterizedby

itsbiologicaloxygendemand(BOD).(BiochemicalOxygenDemandor BODistheindicatorfordeterminingthespeedatwhichbiologicalorganismsuse upoxygen in a bodyofwater)

Once the biological mass is separated or removed, the treated water issubjectedtoadditionalpurificationthroughmechanicaland/orchemicalprocesses. This treated effluent can then be discharged or recycled as perrequirements.

Theremovedbiologicalsolidmatteralsoissubjectedtoadditionaltreatmentafterwhich isalso maybedisposedor recycled.

Accordingly,sewagetreatment consistsof3broadstages:

i) Primary treatment (Removal /Screening of Solids, grit, suspended andfloatingmatters).

ii) Secondary treatment (Biological treatment for reduction of the BOD &COD,andseparationofthebiologicalsolids andeffluent).

iii) Tertiary treatment (Additional process for improving the quality of thefinaleffluentfordisposal/re-use).

ClassificationofMethodsofSewageTreatment

Themethodsandtechnologiesfortreatmentofdomesticsewagevarygreatly, and the pre-dominant systems may be broadly classified under thefollowingcategories:

(a) AerobicSystems:

These are biological treatment systems which utilize aerobic bacteria forBOD reduction in the presence ofoxygen. Aerobic systems are themost widely adopted systems for domestic wastewater treatment, andmaybe sub-categorized asfollows:

i) SuspendedGrowthSystems(e.g.ExtendedAeration.ActivatedSludgeProcessetc.).

ii) AttachedGrowthSystems(e.g.RotatingBiologicalContactors, Floating Aerobic Bioreactors, Submerged AerobicFixedFilmprocessetc.)

(b) AnaerobicSystems:

Thesearebiologicaltreatmentsystemswhichutilizeanaerobicbacteria for BOD reduction in the absence of oxygen (E.g. SepticTanks,UpflowAnaerobicSludgeBlanketetc.).

(c) Physical/ChemicalMethods:

Methods which are biological in nature and utilize physical /chemicalmethods for sewage treatment. (E.g. Membrane Technology, UltraFiltrationetc.).

Acceptability:

i) The sewage treatment plant should be acceptable to the pollutioncontrolauthorities.

ii) The system adopted for treatment should be nuisance – free to beacceptabletothe usersresidinginandaroundtheprojectarea.

iii) The STP should be in line with the concept for the master-planning

ofthe project, and in conformance with the architects and aestheticalrequirements.

iv) Thesystemshouldbeenvironmental-friendly.

EaseofOperation&Maintenance:

Theroutineoperation&maintenanceshould bemanageable.

System components should broadly be of generic nature to ensure easyreplacement&repairs.

Treatment Technologies tobe usedinthe Project.

The Sewage Treatment Plant shall be provided in a Modular'form,basedon—MBBRSystem‖(MovingBedBiofilmReactor).

MBBR treatment system is based on the aeration system in which thescreened raw sewage is allowed to develop the required bacterial growth ina reactor/ Aeration tank. The tank is filled with specially developed proprietyhigh quality plastic media which is in the form of corrugated sheets andconfiguredasperBODloadtobetreatedaspermanufacturer'srecommendation.

The plastic media which has been specially developed bytheindustryforsuchapplicationsoffersalargesurfaceareaascomparedto conventional surface aerator or diffused aeration system. The mediawhich provides large surface areas, provides efficiency in the treatmentprocess and enable large bacterial flocks developed in the aeration to sticktothemediaandassistrapidaerationoftheentiremassofliquid.Retention of the flocks (Sludge) by the media reduces the sludge volume.The volume of sludge developed in the process is in low and reducespumpingandhandlingproblems.Themixedliquorthenseparatesthesludgeandt heeffluentinaseparategravitysettlingtank.Althoughthe quantityofsludgeislessinvolumetobedisposedoffinaneatand hygienic manneranddisposed offina designated location.

CharacteristicsofUntreated&TreatedEffluent

Thelikelycharacteristicsareasbelow.TheSTPdesignshouldbecapableofwithstandinga nyvariation asperactual site conditions.

WasteWater Characteristics

i)	DurationofflowtoSTP	:	24hours
ii)	Peak Factor	:	3
iii)	Temperature	:	Maximum46OC
iv)	pH	:	7.15to8.2
v)	Colour	:	Mild
vi)	T.S.S(mg/l)	:	250to350mg/l
vii)	BOD(5)(mg/l)	:	200to250mg/l
viii)	COD(mg/l)	:	300to400mg/l
ix)	Oil andgrease	:	10–50mg/l

FinalEffluentCharacteristicsafter TertiaryTreatment

a)	pH	:	6.5– 9.0mg/l
b)	B.O.D.	:	<10mg/l
c)	C.O.D.	:	<50mg/l
d)	Totalsuspendedsolids	:	<10mg/l
e)	N-total	:	<10mg/l
f)	NH4	:	<5MG/l
g)	FaecalColiform(MPN/100ml)	:	<230mg/l
h)	PO4-P	:	<2mg/l

DifferentComponentsofthePlant

In the proposed treatment scheme, the following component unit shall beprovided.

(a) Screen chamber
(b) BarScreen
(c) Oil &GreaseTrap
(d) Submersibletyperaweffluent re-liftpumpsforequalizationtank
(e) EqualizationTank
(f) AnoxictankwithAgitator
(g) MBBR-reactor
(h) Tubesettler
(i) SludgeTransferPumps
(j) Sludgeholdingtank
(k) CentrifugeforSludgeDisposal System
(l) SludgeLoadingPumps
(m) ChlorineContactTank
(n) ChlorinationSystem
(o) Filterfeedpump
(p) TertiaryTreatmentUnits(Filters–PSF,ACF)
(q) TreatedWaterTanks(incl.ChlorineDosing)
(r) FlushingWater Supplyvariablefrequencydrivehydro-pneumaticsystem.
(s) Garden Hydrant Water Supply variable frequency drive hydro-pneumaticsystem
(t) DisinfectionSystem(UVetc)
(u) PlantRoomSumpPumps
(v) AirBlowers etc.
(w) Ultra-filtration plant for polishing of treated effluent from filter/activatedcarbonfiltertoreducethe BOD levelless than10 ppm.

ProcessDescription

(a) Raw sewage from main sewer line should be collected through gravitypipes into the screen chamber. This manually cleaned screen shouldbeprovidedtoremovefloatingandbigsizeparticleswhichmayotherwisechokethe pumps and pipelines.
(b) After screening, the waste water should be allowed to pass through aoil & grease trap to remove the grit material. The screens and GreaseTrap shall be accessible so that they may be manually cleaned fromtimetotime.

(c) The Screened and waste water from the Grease Trap should thenpass into the equalization tank to homogenize the waste water qualityand also even out flow fluctuations and feed waste water of uniformquality atconstantrate tosubsequenttreatmentunits.Airmixingshould be provided to mix the contents of the equalization tank. Acoarse bubble aeration grid should be provided to mix the contents ofthe equalization tank and also to avoid septic conditions in the tank.From the equalization tank the wastewater will be pumped into anAnoxic Tank.

(d) At Anoxic tank, in the absence of air denitrification process shall bedone and from the Anoxic Tank mixed liquor will flow by gravity toMBBRTank

(e) The MBBR process uses small plastic carrier elements to providegrowth sites for bacteria attachment in a suspended growth medium.The carrier elements shall allow a higher biomass concentration to bemaintained in the reactor. This shall increase the biological treatmentcapacityforthegiven reactorvolume.

(f) The carrier elements shall be continuously kept in suspension by theaeration system. The agitation pattern in the reactor shall be designedto provide an upward movement of the carriers across the surface oftheretentionscreenwhichcreatesascrubbingeffecttopreventcloggi ng. Combination of fine & coarse bubbles may be provided toprovideoxygen asper detailing.

(g) From the MBBR tank mixed liquor shall flow by gravity into the Tubesettler. The solids will settle in the tank. The sludge that settles downshall be transferred to sludge holding tank via sludge loading pumps,withprovisionofsludgereturntothebioreactorifnecessary.

(h) Fromthetubesettler,treatedwastewaterwillflowintochlorinecontact tank. In this tank, chlorine will be added in the form of calciumorsodiumhypochloritesolutionbyasuitablechlorinator/Dosin gsystem.

(i) Treatedwaterafterchlorinecontacttankshallbeclear,odourless,low BOD, low suspended solids, which shall be acceptable as perCPCB/ Environmental norms to be disposed directly to public/naturaldrain.

(j) The treated water from chlorine contact tank is fed by means of filterfeed pump sets to pass through dual media filters, activated carbonfilters and stored in the filtered water storage tanks. The activatedcarbon filters shall ensure removal of all coloration and odors presentinthe treated effluent. Backwash of Filters shall be done intermittentlyas per requirements. The filtered water being stored in the filteredwatertankshallagainbedosedwithchlorinebyasuitablechlorin ator/Dosing systemand a residual Chlorinelevel of1 PPMshallbe maintained.

(k) TheUVsystemshallbeprovidedinSTPplantroomasonlineinstallation on

the treated water supply lines being supplied to theexternaldistributionrings.

(l) The filtered, clean and odorless water from filtered water tank is thenfed through a variable frequency drive hydro-pneumatic system to theexternal treated effluent rings as per the master plan, from whereconnections are taken to the garden hydrant system and to each unitforflushingwaterasperdetailing.

(m) TreatedwaterwillbefurthertreatedthroughUltrafiltrationplant(Polishing plant) to reduce the BOD level further for water to be usedforflushingpurposes.Fromfilteredwatertankwaterwillbepassed ontoultra-filtrationplant for finally collectioninultra-filtrationtankfrom whereit will be pumped to separate external ring supplyingwaterto dwellingunits.

(n) Excesssludge fromthetubesettlerwill be taken periodicallyintosludgeholdingtank.Inthistanksludgewillbeaeratedfor self-stabilization. Air will be shut off periodically and superannuate waterwill be transferred to the aeration tank creating stabilized sludge. Thefinal sludge shall be de- watered through a centrifuge mechanism.Sludgeloadingarrangementsshallalsobeprovidedfordirectdisposalofsludgetosludgetankers/trolleys.

Re-Use&Disposal ofTreatedEffluent

Considering the site planning and various conditions of the project, re-useofthetreated wastewaterfromthe SewageTreatmentPlantis:

a) Useforflushingandhorticulturalpurposes.
b) Surplus Treated Water from STP to be left near campus boundary, foronward use inotherareas tobedecided bythe JDA.

13. DRAINAGE&RAINWATERHARVESTINGSYSTEM

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.

RainwaterHarvesting

Rain water harvesting system to be designed in accordance with requirement offollowingcodesandstandards:

a) UnifiedBuildingBylaws.
b) Manual on -RainWaterHarvesting&Conservation‖byGovt.ofIndia, CentralPublicWorksDepartment(CPWD),NewDelhi,June2002.
c) Guidelines from Central Ground Water Board – Ministry of

WaterResources,Govt.ofIndia.

d) Part -A‖National Building Code ofIndia‖2016

Following parameters tobeconsideredfor planningrainwater harvesting.

- Rain water harvesting tanks / recharging wells to be designed for 15minutes rainfall of peak rain fall considered as 90 mm/hr as per rainwaterharvestingmanual.
- Rainwater rechargingwellswithboreholesshallbeasperNBC-2016.

14. PROPOSEDSTORMWATERDRAINAGESYSTEM

Thesystemtobebeenproposedafterstudyingthesiteconditionsandconsideringthefollowingfactors:

- Theslopepatternofsiteterrain.
- Theexisting conditionsofsiteandsurrounding.
- Thefinallevelsandpatternsof differenttypeofroads.
- Theneedforincorporationofrainwaterharvestingwithinthesitearea.
- Finaldisposaltoexternaldrainagesystemas per site.

Planningof drainagesystem shallbeas follows:

i) Therainwaterfromtheterracesandrelatedcleanpavedareasofindividual Buildings shall be collected in the collection chambers andshallbeultimatelyconnectedtothemainstorm-waterdrainagesystem.

ii) The network of storm water system shall be mostly catch basins andRCCpipe network,asperrequirements.

iii) For Roof Drainage: Rain water pipes for roof drainage shall be designedasperNBC-2016,Table-23 ofPart-9

iv) Fordesignofstormwaterdrainagesystem,25mm/hraverage rainfallwillbeconsidered.

Forsurfaceandsub-surfacedrainageofthebasementarea,andfordisposaloftherainwaterpipescomingfromtheterraces,aminimumaverage fill of 750 mm shall be required, ranging 900mm all-around to600mm at to the edge of the basement retaining wall. This is recommendedwith a view to dispose the storm water drainage through the catch-basinsandpipesystem,totheexternalmainstormwaternetwork,withoutenteringinsidethe basement.

ParametersforRainwaterCalculations

(I) Areas

TotalareaoftheSite…..... AsperSitem^2

Terrace/Roofarea…..... AsperSitem^2

Paved/Pavement/Roadarea…..... Aspersitem^2

Greens/Landscaped/Lawn areas..... As per sitem^2

(II) Intensityof rainfall

25 mm/hr average rain fall will be considered for design of stormwaterdrainage system.

(I) Co-efficient ofrunofffactorstobe adopted

Typeof catchment	Coefficients
Roof catchments - Tiles - Corrugatedmetalsheets	 0.8-0.9 0.7-0.9
Groundsurfacecoverings - Concrete	 0.6–0.8
- Brick pavement	0.5–0.6
Untreatedgroundcatchments -Soilonslopeslessthan10 percent - Rockynaturalcatchments	 1.0–0.3 0.2–0.5

(II) <u>CoefficientforCalculationforCapacityforCollectionWellsforHarvesting</u>

PeakHourly rainfallas perrainwaterHarvestingmanual	--	90mm/hr
Retention time for capacity of RechargeTank	--	15Minute

15. 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.WastepipesshallconnecttoGullyTrapsoutsideth ebuilding,whichshallinturnbeconnectedtotheexternal man holes.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)shallbe provided. hubless CI Pipe and UPVC Silent pipe systemwillbeinstalled inthe wholepremises.

RequirementsofInternal Shafts

S.No.	Shafts	Size/Details
a)	Main Fire HoseCabinets forsprinklerpipes,fire fightinganddrainlinet oterracelevel	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 asperarch/interiorfinishingdetailsandonlyM.S. Doorprovided.
b)	Plumbing shafts forMainInternalToile ts	Exact Shaft size as per detailing of individual wetareas, so that all vertical pipes are exposed andapproachablewithin the shaft. Appropriate Shaftsizestoensure service accessmust be provided for plumbing shafts of all toilets.AccessDoors/panelsneedtobeprovidedforev ery shaft, at every level, for necessarymaintenance/cleaningpurposes. Shaftstobedesignedtobesealedat allfloorlevels. Allshaftstobeverticallycontinuousfrombasement toterracelevel.
c)	Rainwater PipeShafts	Terrace/Balcony Rainwater pipes to be located inseparate boxing / main plumbing shafts. Size tobereviewedasperdetailing,withfollowingminimum sizes: Appropriate Shaft sizes to ensure service for each250mm,200mminternal,150mminternalDia. PipesAnd100 mminternalDia.Pipe.
d)	Other Shafts /Miscellane ous	Othershaftsmay berequiredasperfinalplanning &clientrequirementsandshallbeprovidedasperdetai ling.

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 CentrifugallyspunhublessCIPipeinternallycoatedwithfullycrosslinkedepoxy

coatings, 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.

18. DRAINAGEOFBASEMENT (If applicable)

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,tocatertothefollowingcir cumstances:

i) All necessary precautions shall be taken to prevent any external stormwater from entering into the ground & basement. The site levels shall bedecidedinsuchawaythatthesurfaceflowtakesplaceawayfromtheentry pointsoframpsstaircasesetc.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/channelsinthebasements below.
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/layoutofchannelsshallbedependinguponthearchit ecturalplansandthe proposedstructuraldetails.
    c. Maximumlengthofchannels shallbeapprox.80meters.
    d. Thedrainchannelsshallbeprovidedwithpropergratingasperarchitect ural details.
v) Thedrainchannelsinbasementshallbedischargingintodrainagesumps, which shallbe havingthefollowingdetails:
    a. Minimum 1800 MMDepth.(300mmfreeboard)
    b. Minimumsizeof2000x2000 MM
    c. TheSumpshallbeequippedwithfixedtypesubmersiblesumpdraina gepumps(1+1Combination),whichshallautomaticallyoperatebas ed ona levelindicatorandcontrollersystem.
    d. The sump pumps shall discharge the drain water outside the buildinginto theexternalstormwaterdrainagesystem.

vi) 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.

vii) 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.

19. WATER SUPPLY

PUMPSPumps

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) Motor control panels,powerandcontrolcablingandalliedelectricalworks.
h) Pipes, valves, accessories, hangers, supports, delivery and suctionfeedersand connectionto proposedpipework.

20. IRRIGATION

WORKSDesignCon

siderations

Source

Due to acute shortage of water in Jaipur primarily treated effluent from STPwillbe utilizedto caterirrigationwaterrequirements.

WaterDemand

9 Water demandforlandscapingareasshallbecalculatedfrom NBC-2016Part- 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 theedgeofshrubplantingandadditionallyincloseproximatelytoadrainagechamberand 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 beuPVC pipes 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.

21. SOLIDWASTE MANAGEMENT

The proposed solid waste management shall be garbage chute systemcomprisesofthefollowing:

Refuse chute enclosures*:* Refuse chutes used for conveyance of garbageand rubbish from upper floors of a building to a cellar or other location shall beconstructedwithanenclosureofbrickmasonryatleasteightinchesinthickness orofreinforcedconcreteatleastsixinchesinthickness.Twoseparatechute shall beinstalled,onefordryandotheroneforwetrefuse.

Refuse Chute : 450 mm dia Garbage chute made of 1.2 mm stainless steel (Grade -304) pipe and necessary fittings. This chute shall be anchored withnecessary fasteners and stainless steel clamps of approved quality to thestructural members of the Chute enclosures. It will have an opening at everyfloor with auto shutoff stainless steel intake hopper door of 90min fire ratingand UL approved with all accessories with strict compliance to NBC 2016.TheOpenings shall have 120^0 C fire sprinklers, with 10LPM Discharge installed init to control any fire break out , it shall also have special de-odorizing cumdisinfectant to curb the bad smell / fumes and germs in the chute. At thereceiving end of chute, a proper collecting hoper shall be provided which cansustain / absorb the impactof garbage and can gently dispose off to thecollectingtrolley.Acleaningsystemshould alsobeprovidedforchutes.

Height and service opening: Refuse chutes shall extend from the refusecollection room to a height of at least six feet above the roof. A spark arrestershallbe provided at thetopofthechuteabove theroof.

Refuse collection rooms: A refuse collection room shall be provided at thebottom of all chutes at the cellar or lowest story level to receive the refuse.Such rooms shall be enclosed with walls and roofs constructed of materialhaving a minimum fire resistive rating of three hours, except that gypsummasonry maynot be used for such enclosure walls. Openings to such roomsshallbeprovidedwithfireproof,self-closingdoorshavingaminimumfireresistive rating of one and one-half hours. It shall be unlawful to keep suchdoors open. Refuse chutes shall extend to the underside of the roof of therefuse room or lower. Roofs shall be at least six inches away from combustiblefloor or wall construction. Refuse rooms shall be used only for receipt of refuseand for refuse compacting equipment. Refuse rooms shall be provided withsufficient sprinklers to sprinkle all parts of the room, with at least two sprinklerheads provided and with sprinklers so separated as to sprinkle a maximumarea ofthe room when one of the sprinklers is blocked or not operating. Ahoseconnection shall beprovided within therefuse room.

The chute should come with fabricated customized trolley of minimum 660 Ltr.capacitywith trolleywheels.

The work has to be carried out as per approved design and drawing completein all respect. (Before installation the shop drawings have to be got approvedfrom JDA.)

22. SIGNAGE(Internal &External)

SITC of following signages shall be in the scope of the agency, fabricated from thematerialspecifiedandasshowninthearchitecturaldrawingsno.SNP/A/DT-101:

Sign.	Signage	Size	Location	Material	Approx. No.
S-1.	UnitSignage	150 x300	Aboveentrydoorofeveryunit	SS	44
S-2.	FloorSignage	300 x450	Ateveryfloor level	Glasslit	20
S-3.	Serviceareasignage	600 x200	Ateveryfloor level	Glasslit	20
S-4.	Basement &GroundDirectionalsignage	450 x150	At all Entry & Exitlocations includingRamps	Glasslit	100

S-5.	FireSignage	500 x150	As perNBC	GlassLit	60
S-6.	ExternalsignagewithRC Cfoundation	500 x300	As per JDASpecification s	RCC withStone	10
S-7.	Column No. Signagein Basement		As per JDASpecification s	Reflectivefilm withmetalbas e	--
S-8	Main Building BlockSignage	AsperDe sign &Drawin g	GroundFloor/ Terrace	LED complete asper designdrawing approved byJDA.	4

Note: SignS-1inSSplates, S-2&S-3shallbeinglasslitsignage.

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) TheitemofworkfortherespectivesignageshallbeconformingtoSpecifications andshallcoveralloperations,fabricationsandtheirinstallationsandmaterialsr equiredforfinishedproduct.

c) Thesignageworkshallbegotexecutedthroughspecializedfabricatorhavingex perienceofsimilarworks.TheContractorshallsubmitthecredentials ofsuchfabricatorforthe approvaloftheJDA.

d) TheContractorshallsubmittheDesign,Sizeandinstallationproceduralong with samples to JDA for approval. Approved samples will be kept atsite till the whole workis completed. JDA has right to modify the design oftheapprovedsamplesandcontractorisboundtofollowthesewritteninstruc tion/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,samplesofvariousmaterialsforthesignagework,forapproval.Afterapprovalofs amplesofmaterials,theContractorshallpreparesample(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.

Sec VI

Conditions&Specificationsof Civil Works

Additionalconditionsofcivilworks

The work in general shall be carried out in accordance with the specificationsmentionedwith thistenderdocument.

Theorderofpreference incaseofanydiscrepancyshallbeasfollowing:

Scope of work, if any services required to make the Hospital building. habitableand completely functional is not covered in the scope of work, interiorand services same shall either be pointed out in pre-bid meeting else, itshall be presumed that the same shall be provided within the quotedcost andnothing extrashall bepaid onthisaccount.

SpecificationsandConditions,AdditionalConditionsmentionedinthisdocument.

JDASpecificationsforcivilandelectricalas applicable.

Indian Standard Specifications of BIS including modifications /amendmentsRelevant Sections

of National Building Code 2016 with up-to-date amendmentsSoundengineering practiceasper

directionsoftheJDA.

Agency(s)shallprovidepermanentbenchmarks,flagtopsandotherreferencepointsfortheproperexecutionofworkandtheseshallbepreserved till the end of the work. All such reference points shall be in relationto the levels and locations, given in the Architectural and plumbing drawings.On completion of work, the Agency(s) shall submit six prints of ‐as built‖ drawings totheEngineer-in-Charge(Hard &softcopyboth)

The Agency (s) should engage approved, licensed plumbers for the work andget the materials (fixtures/fittings) tested, by the municipal Body/Corporationauthorities wherever required at his own cost. The Agency(s) shall submit forthe approval of the JDA, the name of the plumbing Agency proposed to beengagedbyhim.

The agency shall give performance test of the entire installation(s) as per thespecifications in the presence of the JDA or his authorized representativebefore the work is finally accepted and nothing extra what-so-ever shall bepayable to theagencyforthe test.

TheworkshallbecarriedoutinaccordancewiththeArchitecturaldrawingsandstructuraldrawings, interiorandfinishingdrawings approvedbytheJDA.

Before commencement of any item of work the agency shall correlate all therelevantarchitecturalandstructuraldrawings,andspecificationsetc.andsatisfy himself that the information available is complete and unambiguous.Theagencyaloneshallberesponsibleforanylossordamageoccurringbythecommencementofworkbasedonanyerroneousandorincompleteinformationandnoclaimwhatsoevershallbeentertainedonthisaccount.

Theworkofserviceswillbeexecutedsimultaneously.Theagencyshallminimize the scope of making recesses, holes, opening etc. as the same shallbe planned and necessary grooves/niches shall be provided in shuttering ofRCC.

The agency shall conduct his work, so as not to interfere with or hinder theprogress or completion of the work being performed by other agency(s) or bytheJDAandshallasfaraspossiblearrangehisworkandshallplace

and dispose ofthe materialsbeingused 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.Allmaterialsandarticlesbroughtbytheagencytothesiteforuseshallconformtothesamplesapprovedbythe 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&PistobebroughtatsiteshouldalsobeindicatedIt.

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.

Submissionofcopyofalltestregisters,MaterialatSiteRegisterandhindrance 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,earthfillingetc.

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

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.

1.CIVILWORKS

A. EXCAVATIONANDFILLINGINFOUNDATIONANDPLINTH

1.0 SETTINGOUT

1.1 Itshall be the responsibility ofthe contractorto install substantial reference marks,bench marks etc. and maintain them as long as required by theJDA. The contractorwillassumefullresponsibilityforpropersettingout,alignment,excavationanddimensionofeachand all partsofthework.

2.0 EXCAVATIONANDPREPARATIONOFFOUNDATIONFORCONCRETING

2.1 The Foundation shall be dug to the dimensions as shown on the drawings or as directedby the JDA.The excavated materialshall be stackedatasufficientdistance awayfromtheedgeoftheexcavatedpitsoasnottoendangerthestabilityofthesides.

2.2 Ifexcavationiscarriedouttogreaterdepththanspecified,extradepthshallbemadeup by filling in lean concrete.Cost of such extra filling required therein as specifiedaboveshall be borne infull bythe contractor.

2.3 Ifrequiredtoprotectthesidesofpitsand trenches,timbershoringandstruttingshall be erected.The timbering shall be closed or open depending on the nature of thesoilandworkandthearrangement oftimberingincludingsizesandspacingofmembers used shall be as approved by the JDA. No extra charges shall be admissibleonthisaccount.

2.4 The bottom of all excavation shall be leveled in accordance with the drawings/directionsoftheJDA.

2.5 The contractor shall report to the JDA when the excavations are ready to receiveconcrete. No concrete shall be placed in foundations until the contractor has obtainedtheapprovalofJDA.

2.6 After the excavation is passed by the JDA (and before laying concrete) the contractorshall get the dimensions of the excavation and levels recorded jointly with the EngineeroftheJDA.

3.0 BACKFILLING

3.1 Back filling in sides of foundation shall be done with soil approved by the JDA takenfrom excavation or from outside the site. The backfilling shall commence only after theapprovaloftheJDA.

3.2 Fill shall be of well compactable, well graded earth or sand and shall be free from treestumps, organic matter, seed, peat etc. Where earth or sand from sourceother thanexcavation at site is used, the quality ofsuch earthor sand shall be the same as thatobtainedfromexcavation at site,orsuperiorto it.

4.0 DEWATERING

4.1 Rate for excavation shall include bailing or pumping out water which may accumulate inthe excavation during theprogressof work either from seepage,springs, rain,curingor anyother cause anddivertingsurfaceflowifanybybundsor othermeans.

4.2 Theexcavation shall be keptfreefromwater

a) Duringinspectionandmeasurement.
b) Whenconcreteand/ormasonryareinprogressandtilltheycomeabovethenatural waterleveland,
c) TilltheJDAconsidersthattheconcrete/mortarissufficientlyset.

5.0 DISPOSALOFEXCAVATEDMATERIALS

Theexcavated material certified as surplus and notuseful shallbe removed by the contractorfromthesiteinanapprovedmanner,However,thisistobenotedthatanyfindsofarchaeological interest such asrelicsof antiquity, coins,fossils or other articles of any othermaterialsof valueshall be delivered to the Raj. Housing Board. The decision of the JDA as tothe nature of find shall be final and binding. The contractor shall have to dispose off theexcavated materials asper the local bylaws ofthe relevant authorityand in conformity withthe instructions/rules of the local bodies/government in this regard to a site/location of hischoice. Any permission/approval of the Competent Authority in this regardisthe responsibilityof the contractor and nothing extra shallbe paid to him on this account. The earth/rock will beremoved,carted anddisposedoffby the contractorathisowncostandunderhisownarrangementand nothingextra shallbepaidto him onthisaccount.

6.0 RATESTOINCLUDE

Apart from other factors mentioned elsewhere in this contract, item of excavation shall alsoincludeforthefollowing:

a) Cleaning ofthesite
b) Setting outworksasrequiredandsettingupbench marksandotherreferencemarks.
c) Providing shoring andstrutting andsubsequentlyremovingthesame.
d) Bailing and pumpingoutwaterasrequiredanddirected.
e) Excavationat alldepthsandremovalofallmaterials
f) Backfillingthetrenchesalongsidemasonryorconcreteuptothenaturalgroundlevelincludingwaterandramming.
g) Necessaryprotectionincludinglabour,materialsandequipmenttoensuresafetyandprotection againstriskoraccident.

7.0 PLANKINGANDSTRUTTING

In case of deep trenches where the soil is softand not capable ofbeingretainedwithout the help of support, planking and strutting as required shall be carried out. Itshall be the responsibility of the contractor to take steps to prevent slide / collapse.Method of planking / strutting will be largely influenced by the type of soil encounteredandasapproved bytheJDA.

8.0 MEASUREMENTSANDEXCAVATION

a) Measurementsofearthworkinexcavationshallbedone asperthedimensionoffoundationshown in thedrawings.
b) The total quantity of earthwork in excavation shall be determined by taking the existinggroundlevelsatvariousplaces andthefinalexcavated levels.

ANTITERMITETREATMENT

I. IndianStandards

IndianStandardstobefollowedare

1] IS 6313(PartI): CodeofpracticeforAnti-termite measuresinbuildingsconstructionalmeasures.

2] IS6313(PartII) Codeofpracticeforanti-termite measures in Building (pre constructional chemicaltreatment].

II Materials

Oneofthefollowing chemicals inwater emulsionshallbeused.

Chemical	IS No.	:	concentration by weight, percent.
Chloropyrifos	IS 8944	:	1%
Lindane	IS 632	:	1%

III. Workmanship

a. Barriershallbecompleteandcontinuousunderthewholeofthestructuretobeprotected. All foundation shall be fully surrounded by and in close contact with thebarrier of treated soil. Each part of the area treated shall receive the prescribed dosageofchemical.

Timeofapplication.

b. Soil treatment should start when basement/foundation trenches and pits are ready totake mass concrete in foundations. Laying of mass concrete should start when thechemicalemulsionhasbeenabsorbedbythesoilandthesurfaceisquitedry.Treatment shouldnotbecarriedoutwhenitisrainingorwhenthesoiliswetwithrainor sub-soil water. The foregoing applied also in the case of treatment to the filled earthsurfacewithin the plintharea beforelayingthesub-gradeforthefloor.

c. Disturbance

Once formed, treated soil barriers shall not be disturbed. If by chance, treated soilbarriers are disturbed, immediate steps shall be taken to restore the continuity andcompletenessofthe barriers-system.

d Termitemoundtreatment

if termite mounds are found within the plinth area, these shall be destroyed by pouringintothe moundsatseveral places,afterbreakingopen the earthenstructureandmaking holes with crow-bars, at the rate of approximately 4 litres of emulsion per cubicmeter ofmound.

e Soiltreatment

Treatmentofcolumnpitsfoundation,trenchesandbasementexcavations:

The bottom surface and the sides (upto a height of 300 mm above concrete foundationlevel) of the excavations made for column pits, wall trenches and basements shall betreated with the chemical at the rate of 5 litre per sqm of surface area. After the columnfoundation and retaining walls of the basement come up, the back fill in immediatecontact with the foundation structure shall be treated at the rate of 15 litres per sqm ofthe vertical surface of the substructure for each side. If water is used for ramming theearth fill the chemical treatment shall be carried out after ramming operation is done byrodding the earth at 150 mm centers close to wall surface and spraying the chemicalwith the above dose. As earth filled in layers the treatment shall be carried out in similarstages. The chemical emulsion shall be directed towards the concrete or masonrysurfaces is well treated with the chemicals. In the case of RCC framed structure withcolumnsandplinthbeamsandRCCbasements,thetreatmentshallstartatthedepthof 500 mm below ground level. From the depth the back fill around the columns beamsand RCC basement wall shall be treated at the rate of 15 litres per sqm of verticalsurface.Theotherdetailsoftreatmentshallbeas described below:

a. Treatmenttotopsurfaceofplinthfilling:

After the earth filling is completed in the plinth area and before the rubble packing orsubgrade is laid, the entire surface of the filled earth shall be treated with the chemicalemulsion at the rate of 5 litres per sqm. Light rodding may be carried out in the soilsurfacetofacilitateabsorptionsaturationofthesoilwith chemical emulsion.

For buildings, where construction has advanced already for facility of construction, thetreatment could also be done effectively, over the base concrete (lean mix) under thefloor taking care that the emulsion, at the rate of 5 litres per sqm soak fully into theconcrete.
Theaboveapplicationeffectivelypreventsentryoftermitesthroughthefloorstructure.

b. Treatmentof soilalong externalperimeter

Finally the earth around the external perimeter of the building upto a depth of 30 cm.shall be treated at the rate of 5 litres per running matre of the external wall. To facilitatethis treatment solid MS rods should be driven into the soil as close possible to the plinthwall at intervals of 15 cm and upto a depth of 30 cm. and the rods moved backwardsand forwards in a direction parallel to the wall to break up the earth so that the emulsionmixesintimatelywith thesoil.

c. Treatmentof soilsurrounding pipes,wastesandconduits

When pipes, wastes and conduits enter the soil inside the area of the foundation, thesoil surrounding the points of entry shall be loosened around each such pipe, waste orconduits for a distance of 15 cm and upto a depth of 7.5 cm before the treatment
iscommenced.Whentheyenterthesoilexternaltothefoundations,theyshallbesimilarlytr eatedunlesstheystandclearorthewallsofthebuildingbyabout7.5cmfora distanceover30cm.

d. Treatmentforexpansionjoints:

Expansionjointsatgroundfloorlevelareoneofthebiggesthazardsfortermiteinfestation.T hesoilbeneaththesejointsshouldreceivespecialattention.Thistreatment should be supplemented by treating through the expansion joint after thesub-gradehasbeenlaidattherateof2litersperlinear meter.

e. Spraying equipment:

A pressure pump shall be used to carry out spraying operations to facilitate uniformspraying and penetration of chemical into the earth. The chemicals, concentration anddosage for horizontal and vertical surfaces are based on the IS code of practice forAnti-termitemeasuresinBuildings.IS 6313(PartII).

Measurements:

Measurement,ifrequiredincaseofpreconstructiontreatmentasdetailedaboveshallbefor actual area coveredbybuildingatgroundlevelin plan in sqm.

Freeserviceguarantee:

Thecontractorshallnotethattermiteproofingwork,issubjecttoafreeserviceguarantee from the date of completion of the treatment. The contractor shall give anundertaking in writing to the effect that during the guarantee period any infestation ofsubterranean termites will be eradicated and necessary treatment carried out to preventre-infestation, free of cost to the employer. The guarantee shall allow a minimum periodof10(ten)yearsforpre-constructionaltreatment.

Tenderers must ensure that the work will be done through the professional Pest Controloperator. they should be members of Indian PestControl Association or any otherrecognized professional body. They should furnish a list of termite control jobs carriedout by them successfully for Government Department, Statutory bodies or large privateorganizationstoprove thattheyarecapable ofhandlingantitermitework.

C MORTARS:

Mortars shall be prepared by mixing graded fine aggregate with cement, in proportionspecified for respective items ofworkas detailed inspecifications or drawings. Mixingof mortars shall be done by mechanical mixers only. Hand mixing may be permitted onspecifiedcaseson written permissionfromthe engineer.

Mortars shall be classified by proportion only. They shall not be specified by strength.Volumetric mixing shall be based on dry volumes of each ingredient. For convenience,measurement shall correspond to volume of one cement bag i.e. 0.035 cum boxes shallbe made of size 40x35x25 cm. these shall be marked as mortar mixing boxes by readpaint and shall be used throughout the contract. Hand mixing or mechanical mixingproportioningshall be done withuse ofthese boxes.

Cement mortar shall be prepared by mixing cement and sand in specified proportions.Proportioning shall be carried out as detailed above. Sand shall be added suitably toallow for bulkage. Bulkage shall be determined as specified in I.S. cement and sandadded to the mixer shall be thoroughly mixed and water shall be added to it gradually.Mixer after addition of water shall run for minimum 3 minutes. Mortar mixed shall beconsumedwithin 30 minutesofmixing.

D. CONCRETEMIXANDMORTAR:

Whenever not specified in the specifications or on the drawings, use following mixes:a]

plain concreteunderfoundations andflooretc.
Cementconcrete1:4:8[1cement:4coarsesand:8stoneaggregate40mmsize].

b] Plain concrete for bed block, concreteblocks to anchor door and windows hold fasts,gate posts, grill blocks coping and anchor foundations of over head water tank deckingetc.

CementmixM-15

c] Reinforced cement concreteConcretemixM-20ConcretemixM-25

d] Precast concrete memberconcretemixM-15

e] Mortarforblockwork, stonemasonry:
i] Cementmortar1:6[1cement:6coarsesand]for200mm orthickersections.
ii] Cementmortar1:4[1cement:4coarsesand]forsectionsthinnerthan200mm.

f] Mortarfor plastering:

Cementmortar1:3[1cement: 3sand].Formembers incontact withsoilor plinthfilling.Cementmortar1:6[1cement:6sand]forinternalplaster.
Cementmortar 1:4[1cement:4 sand]forexternalplaster

E. CASTINPLACEREINFORCEDCEMENTCONCRETE

1.0 GENERAL

1.1 DESCRIPTION
Thissectioncoverstherequirementsforfurnishingofcementconcreteincludingmaterials,proportioning,batching,mixing,testing,placing,compacting,finishing,joining,curing andallotherworkasrequiredforreinforcedcementconcrete.Cement concrete shall be composedof cement, fine aggregate, coarse aggregate,andwaterwithorwithoutadmixtureasapproved,proportionedandmixedasspecifiedherein.

1.2 RELATEDWORK SPECIFIEDELSEWHERE
a) Steelreinforcement
b) Formwork

1.3 APPLICABLECODESANDSTANDARDS
Thecodesandstandardsgenerallyapplicabletotheworkofthissectionarelistedhereinafter.

IS:269Ordinaryandlowheat PortlandCement.

IS:383 Coarse and fine aggregates from naturalsources for concrete.IS:455Portland slag cement.

IS:456Codeof Practiceforplainandreinforced concrete.IS:516Methods

oftestforstrengthofconcrete.

IS: 1119 Methods of sampling and analysis of concreteIS:1489

PortlandPozzolana cement.

IS:1838Performedfillersforexpansionjointsinconcretenonextrudingandresilienttype.

IS:1946Codeofpracticeforuseoffixingdevicesinwalls,ceilingandfloorsofsolidconstruction.

IS: 2386 Methods of test for aggregates for concrete.(PARTITOIII)

IS: 2645Integralcementwaterproofingcompound.

IS: 3414 Code of practice for design and installation of joints in building.IS:3535

Methodsofsamplinghydraulic cement

IS: 3558 Code of Practice for use of immersion vibrators for consolidating

concrete.IS:4031 Methods ofphysicaltestforhydraliccement

IS:4032Methodsofchemicalanalysisofhydraulic cement

IS: 4082Recommendationsonstackingandstorageofconstructionmaterialsatsite.

IS:6925Methodsoftestfordeterminationofwater-solublechloridesinconcreteadmixtures.

2.0 SUBMITTALS:

2.1 MATERIALSREPORT

2.1.1 Priortostartofdeliveryofmaterialsrequiredforcementconcrete,thefollowingshallbesubmittedbytheContractortothe JDAforapproval:

a) Recommended supplier and/or sources of all ingredientsformakingconcreteincludingcement,fineandcoarseaggregatewaterandadditives.

b) Qualityinspectionplantoensurecontinuingqualitycontroloringredientsbyperiodic sampling, testing andreportingto the JDAonthequalityofmaterialsbeingsupplied.

2.2 MIX DESIGN

2.2.1 Thecontractor shall design mixes foreachclass of concrete indicating thatthe concrete ingredients and proportions will result in concrete mixmeetingrequirementsspecified.

2.2.2 Priortocommencementofconcretingworkthe Contractor shallsubmitthemixdesignasa report for the approval of JDA. This report shall comparetheproposedmixdesignwithspecifiedrequirementsandshallbesummarizedonaformsimilarlytothatshown in Appendix-I.

2.3 PLANTANDEQUIPMENT

2.3.1 TheContractorshallsubmitthefollowingtotheJDA wellinadvance:

a) The proposedprogramme, methodsanddetailsofplantandequipmenttobeused intesting ingeredients,mixdesign andconcretesamples.

b) The proposed programme, methods and details of plant andequipmenttobeusedforbatchingandmixingofconcrete.

2.4. CERTIFICATES

2.4.1 With each mix design, the Contractor shallsubmit laboratory test reports, andmanufactures certificates test reports and manufacturer's certificates attestingthatingredientsareconforming tospecifications.

2.4.2 In case the source, brand or characteristic propertiesofthe ingredients need tobe varies during the term of the contract,a revised laboratorymixreport shallbesubmitted.

2.5 REPORTFORINSPECTIONANDTESTING

Duringconcretingoperations,theContractorshallconductinspectionandtesting,andall reportsthere onshall be submittedin summaryformtotheJDA.

2.6 SCHEDULES

DuringContractorshallprepareworkingschedulesfordatesandrateofplacingofconcretefor eachitemofworkandsubmit thesametothe JDAwhenrequested.

3.0 MATERIALS:

3.1 Beforebringingtothesite,allmaterialsforcementconcreteshallbeapprovedbytheJDA.All approvedsamples shall be depositedin the office of theJDA beforeplacing orders for thematerials withsuppliers. The materials brought on to theworksshallconformin everyrespecttotheir approved samples.

3.2 Freshsamplesshall be deposited withtheJDA whenevertypeor source of anymaterial changes.The Contractorshallcheckeachfresh consignmentof materialsas it is brought on to the worksto ensure that they conform to the specifications and/orapproved samples.

3.3 The JDA shall have theoption to have any of the materialstestedtofinewhethertheyare in accordancewithspecifications atthe Contractor's expense.All bills,vouchers andtestcertificates, whichin the opinionof the JDA, arenecessary toconvince him as to the quality of materials of their suitabilityshall be produced for hisinspectionwhenrequired.

3.4 Anymaterials which have not been found to conform to the specifications and notapproved bytheJDA shall be rejected and shall be removed from the site by theContractorathisown costwithinthe time stipulated by the JDA. The JDAshallhave thepowers to cause the Contractor's topurchaseand usematerials from anyparticular source, asmayin hisopinion be necessary for the properexecutionofwork.

3.5 AGGREGATES

3.5.1 Aggregatesfromnaturalsourcesshallbe in accordance with IS:383. TheContactor shall submit tothe JDA certificates of gradingand compliance fromthesuppliers for all consignments of aggregate. In addition, fromtime to time,the Contractorshall test the aggregates atsitein accordance with IS: 2386,partI,II andIII.TheContractorshallallow forand provide all necessaryapparatus for carryingout such tests and for supplying test records to theJDA.

3.5.2 Forfairfacedconcrete,theContractorshallensurethataggregatesarefreefromir onparticlesandimpurities,whichmaycausediscoloration.

3.5.3 FINEAGGREGATE

3.5.3.1 Thefine aggregate shall be pit sandstone dust or other approvedsand. It shall be free from clay, loan, earth or vegetablematter andfromsaltorotherharmfulchemicalImpurities.Itshallbeclean,sharp, strong,angularand composedofhardsiliceousmaterials.

3.5.3.2 Thegradingof sand asdeterminedbythe methods prescribedin IS:2386PartIshallbewithinthelimitsofGradingZoneIIIgivenintable 1. Whenthe gradingfalls outsidestheirpercentage limits givenforsievesotherthan600micron,300micron and150-micron(I.S)sieves but not more than5 percent,it shall beregardedasfallingwithin this zone. The 5% it shall be regarded asfalling within this zone.The5%can beexcess summation onone ormore sieves.

TABLE-FINEAGGREGATE

I.SSieveDESIGNATION	PERCENTAGEPASSINGFORGRADING		
	ZONE-I	ZONE-IIZONE-III	
10 mm	100	10 0	1 0 0
4.75mm	90-100	90-100	90-100
2.36mm	60-95	75-100	85-100
1.18mm	30-70	55-90	75-100
600micron	15-34	35-59	35-60
300micron	5-20	8-30	8- 30
150micron	0-10	0-10	0- 10

3.5.3.3 The maximum quantity ofsiltas determined by themethodprescribed in IS:2386PartIIshall notexceed8 percent.

3.5.3.4 Stone dust shall be obtained by crushing hard stoneand the grading as determinedbythe method prescribed in IS: 2386 part I shall be withinthe limits of Granding fallsoutside thepercentage limits given forthesieves otherthan 600 micron and 300micron(I.S) sieves by not more than 5% and on 150micron sievebynot more than20% canbe excesssummation onone ormoresieves.

3.5.4 COARSEAGGREGATE

3.5.4.1 TheCoarseaggregateshallbecrushedstone,rivershingleorapprovedpitgrav el.

3.5.4.2. Coarseaggregateobtained fromcrushedor broken stone shall be angular,hard,strong, dense,durable,clean and free fromsoft, friable,thin,flat,elongatedorflakypieces.

3.5.4.3. Rivershingleorpitgravelshallberounded,sound,hard,clean,non-porous,suitably gradedinsizewithorwithout broken fragmentsandfreefromflatparticlesofshale, clay,silt,loamandother impurities.

3.5.4.4. Exceptwhereitcanbeshown to the satisfaction of the JDA that a supplyofproperlygradedaggregateof uniform quality can be maintained over theperiodofworks, thegradingofaggregateshall be controlled by obtainingthecoarseaggregateindifferentsizesandblendingthemincorrectpro portions asand when required.

3.5.4.5. The maximum size of coarse aggregate shall be suchthatthe concrete can beplaced withoutdifficulty soasto surround all reinforcement thoroughly and fillthecornersofformwork.

3.6 WATER

3.6.1 Water used in the works shall be potable water and freefrom deleteriousmaterials. Waterusedfor mixing and curing concrete as well as forcoolingand/or washing aggregate shall be fresh and clean, free from injurious amountsofoil,salts,acids,alkali,otherchemicals andorganic matter.

3.6.2 WatershallbefromthesourceapprovedbytheJDAandshallbeinaccordancewith clause4.3ofIS:456.

3.6.3 Beforestartinganyconcretingworkandwhereverthesourcesofwaterchanges, the water shallbetestedfor its chemicaland other impuritiestoascertaining its suitability for use inconcrete forapproval of the JDA. Nowater shallbeused until tested and found satisfactory . Cost of all suchtestsshallbe bornebythe Contractor.

3.7 ADMIXTURESANDADDITIVES

3.7.1 Chemicaladmixturesarenot tobeuseduntil permittedby the JDA. In casetheir useis permitted, the type, amount and methods of useof any admixtureproposedbytheContractorshallbesubmittedtotheJDAforapproval.

3.7.2 The Contractor shall furtherprovide the followinginformationconcerning eachadmixturetothe JDA.

a) Normaldosageanddetrimentaleffectsifanyofunderdosageandoverdo sage.
b) Thechemicalnamesofthemainingredients intheadmixture.
c) Thechlorideioncontentifanyexpressedasapercentagebyweightofadm ixture.
d) Whetherornottheadmixtureleadstotheentrapmentofairwhenusedinth emanufacturersrecommendeddosage.
e) Where twoormoreadmixturesare proposedtobeused inany onemix,themanufacturerswrittenconfirmationof their compatibility.

3.7.3 Inreinforcedconcrete,thechlorideionofanyadmixtureusedshallnotexceed 2percentby weightofthe admixtureas determined in accordance with IS:6925 and thetotalchloridein all admixtures used in concrete mix shall notexceed0.30 percentbyweightorcement.

3.7.4 The admixtureswhenusedshall conform to IS:9103Trial mixes shall verifythesuitabilityofall admixtures.

3.7.5 The addition of calcium chloride to concrete containing embedded metal will notbepermittedunderanycircumstances.

3.7.6 Retarding admixtures when used shall be based on lingosulphonates with dueconsiderationto clause5.2and5.3ofIS:7861.

3.7.7 WaterproofingadmixturesshallcomplywithIS:2645.

4.0 PLANT:

4.1 The Contractor shall obtain the approval of theJDAforallplantitemshepropesestouseforthemanufactureandplacingofconcrete.

4.2 Thearrangementandsitingofplantforthemanufactureofconcreteshallbeagreedwiththe JDA.

4.3 TheContractorshallmaintainallitemsofplantatalltimesinacleanandefficientworkingcon dition.

5.0 STORAGE:

Allgoodsandproductscoveredbythesespecificationsshallbeproducedwellinadvanceandstored asspecified below:

5.1 CEMENT

5.1.1 Cementshall be stored on a raisedfloor in dry weatherproofand drought freebutwell ventilated shed.

5.1.2 Cementbags shall be stacked close togetheraway from external walls and instacksnotmorethanten bagsto avoidlumpingunderpressure.

5.1.3 Cementstored during monsoons or cementexpected to be in store for morethan eight weeks shallbe completelyenclosed in 700 gauge polythenesheetso arranged that the flap closes on the top stack. The Contractorshallensurethatprotectivepolythenesheetis notdamagedatanytimeduringuse.

5.1.4 Cementofdifferenttypes shallbestoredin separate sheds or separatecompartment of ashed. Ifdifferenttypesof cementare mixed,the JDA willhavethediscretiontocondemnallthe cementconcerned.

5.1.5 Consignments of cement shall be usedin orderof delivery.A record shall bekeptofthebatch numbersof cement deliveries in such a formthat the part oftheworksin whichthecementisused can bereadilyidentified.

5.1.6 TheContractorshallberesponsible for the storage of cement at the site andno claim will be entertained in the event of any damage occurring to cement duetofaultystoragebytheContractorsoronaccountofhisnegligence.

5.1.7 Cementstored on site fora period longer than eight weeks shall be tested tothesatisfaction oftheJDA beforeitisusedinthe works.

5.1.8 Cementwhich has so deteriorated in quality that itnolonger conforms in allrespects to the requirements of this specificationwill be condemnedby theJDA and shall not beused intheworks. The Contractorshallimmediatelyremovefromthesiteall cementthathasbeensocondemned.

5.2 AGGREGATES

5.2.1 Aggregates shall be stored on a suitable well-drained raft of concrete, timber,metal orotherapproved material.The storage of aggregate on the ground willnotbepermitted.

5.2.2 Each size of aggregate shall be stored separately insuchas manner as toprevent spillage and mixing of one aggregate withan adjacent aggregate. Thedividing walls of any binsshall be of sufficient height and the aggregate shallbe sodeposited that adistanceof 300 mm shall be left between the top ofthedivisionwallandanypartofthe aggregateslack.

5.2.3 Whenslackpiling,theaggregateshallnotformpyramidsresultinginsegregationof different size particles the slacks shall be regular andof aheightnotexceeding twometers.

6.0 CONCRETEMIXPROPORTIONS:

Cementconcreteused intheworksshallbeeitherorthetwo categoriesgiven below:

6.1 ORDINARYCONCRETE

All cement concrete not designated by strength shall be treated as ordinaryconcreteofnominalmix as specified.Theaggregates and cementshallbeas specified.The aggregates and cement shall be measured byvolume. Mixing water shall bemeasuredingraduatedlitrecans.

6.2 CONTROLLEDCONCRETE

6.2.1 Allcementconcretedesignatedbystrengthshallbetreatedascontrolledconcrete . The controlled concrete shall conform to one ofthegrades specifiedhereinoronthe drawings. The aggregates and cement shall be measured byweight in approved weight batching equipment. Mixing water shall be measuredin graduated liter cans. One or more complete bags of cement shall be used foreachbatchofconcrete.

6.2.2 The controlled concrete shall meet with the strength requirement laid down intable 2.The aggregate cement ratio and water cement ratio to be used forobtaining the specified cube strengths given in Table 2 shall be determined inaccordance with the design of determined in accordance with the design of themix.

6.2.3 TheContractorshallberesponsiblefordesigningmixesofthespecifiedperformancetosuit thedesignofworkabilityandcharacteristicstrength,requiredforthevarious partsoftheworks.

6.2.4 Alternative mixes may be designed by the Contractor for use in both thinandnarrow sectionsand thick sections. Special mixesusing finer aggregates maybedesignedbyhimfor infillingpocketsandnarrow spacesand for regionsofcongestedreinforcement.

6.2.5 The minimum cement content for controlled concrete shall not be less than theamountsgiven in Table2forthe particulargradeofconcrete.

TABLE -2

Group	GradeDesignation	Specified CharacteristicStrengthof150mmCubeat 28days inN/mmsq.
Ordinaryconcrete	M10	10
	M15	15
	M20	20
StandardConcrete	M25	25
	M30	30
	M35	35

	M40	40
	M45	45
	M50	50
	M55	55
HighStrengthConcrete	M60	60
	M65	65
	M70	70
	M75	75
	M80	80

7.0 WATERCEMENTRATIO

7.1 The quantity ofwateraddedtothe cement and aggregates during mixing shall besuch as to produce concrete having sufficient workability to enable itto be properlycompactedto beworkedintothecornersoftheshutteringand aroundreinforcement.

7.2 Due account shall be taken of the variation of moisture contentwithin any consignmentof aggregateandany variations due to watering, exposure to rain ordrying weather.The content tests in accordance with IS:2386 PartIIIonstacked aggregates asdirectedbytheJDA and resultssubmittedto him.

7.3 In case of ordinary concrete the maximum value of water cementratio shallbe0.50andinthecase of controlled concretethewater cement ration is determined bythemixdesign.

7.4 The Contractorshallexerciseparticularly tight controlon the water content for fairfacedconcretethecolourofwhichissensitivetosmallvariationofwaterinmix.

7.5 When a suitable water cement ratio has been determined and agreedwith the JDA, itshall bemaintainedthroughoutthe correspondingpartofworks.ApprovedtestsshallbeundertakenperiodicallybytheContractortosatisfytheJDAiftheContractorisabletodemonstratethatsuchareductionisconsistentwithproducingconcrete oftherequiredworkabilityandcharacteristicstrength.

7.6 TheContractor shall frequently test the concretefor slump-cone test. The slump at thepoint of placingas measuredin accordance with the methods laiddownis IS: 1199shallnotbemorethan75mmandnotlessthan20mmexceptforconcretecontainingaretarding/plasticizeradmixturewhentheinitialslumpshallbe100mmto125mm.

8.0 REQUIREMENTOFCONTROLLEDMIXES

8.1 Themeasureofqualitycontrolexercised by the Contractor in the manufacture ofthe Concrete mix shall be the standard deviation derived from the analysisof cuberesultstested inaccordance with IS:516.

8.2 The contractorshall design each concretemix to have mean strength greater than therequiredcharacteristic strengthby atleastthe current margin defined as 1.64 timesthe standarddeviation. In the firstinstance theContractorshall assume as StandardDeviationof 5.5N/mm.

8.3 Should the analysisof the first 30 cubetest results ofconcreteof nominallysimilarproportions of similar materials and produced over a periodexceeding 5daysbut notexceeding 6 monthby thesame plantunder similar supervision show the standarddeviation tobe less than 4.5 N/sq.mm the mix may bere-designed assumingastandard deviation of4.25 N/sq.mmin which case the Contractor shall submitdetails oftheproposednewmixproportionstoJDAfor hisconsideration.

8.4 Should the further analysisof the next 100 cubetest results of concreteof nominallysimilarproportionsofsimilarmaterialsandproducedoveraperiodnotexceeding

12monthby the sameplantunder same supervision showthe standard deviationto be less than 3.75N/sq.mm the Contractor may redesignthe mix assumingastandard deviation of 3.5 N/sq.mm.and shallsubmit the details of theproposednewmixproportions tothe JDAforhis consideration.

8.5 If at anytime the statistical minimum strength ofthe concrete defined as the meanstrength minus 1.64times theactual standard deviation as determined fromcube testresults falls below thecharacteristic strength, the mix shall be redesigned by theContractor.Details of the new mix proportions shall be submittedtothe JDAforhiscommentsandtheContractor'ssupervisionanddegreeofcontrolovermixproportionsshall be required.

9.0 APPROVALOFDESIGNEDMIXES

9.1 TheContractorshallsubmittothe JDAfor commentsufficient evidence based ontrial mixesthat foreach grade of concrete the intendedworkability, theproposedmixproportionsandthe method of manufacturewillproduceconcreteoftherequiredquality.

9.2 TheContractorshall obtain fromtheJDAhis writtenapproval on the mix design foreachgrade ofconcretebeforeanyconcrete ofthatgrade is placedintheworks.

9.3 Foreach grade of concrete, three separate batchesof concrete shall be madebytheContractorusing materialstypicalof the proposed supplyandunder full-scale sitecondition.

9.4 Theworkability of each of the trial batches shallbe determined and 6 specimenpreliminary test cubesshall be produced from each trial batch. Three cubes of eachsetshallbetestedat7daysandtheremaining3cubesofeachsetshallbetestedat28days.

9.5 Thetrialmixproportionsforeachgradeofconcreteshallbeconsideredsatisfactoryiftheme anstrengthofthe9cubestestedat28daysexceedsthespecifiedcharacteristicstrength by between 0.6 and1.2times thecurrentmarginand theleastcubestrengthis greater than the specified characteristic strengthand theconcrete contains the correct amount of cementand thefreewatercement ratioisbelowthe maximumspecifiedvalue.

9.6 Following agreement with the JDA on the trial mix proportions shouldtheContractorwishtomake substantialchangesinthe materialsorinthe proportionsof thematerials to be used in a mix, the JDAwill require further trial mixes to bemade andtheir results submitted for the comments priorto suchmaterialsor proportions beingadoptedbythe Contractor,exceptthat no such trial mixeswillbe requiredundersubclause 8.3 and8.4ofthis specification.

10.0 CONCRETETESTING

10.1 TESTCUBES

10.1.1 The strength of concrete either inassessing thesuitability of the trial mixesorwhenplaced in teh works shall be determinedfrom 150mm cubes made, cured, stored,transportedandtestedin accordance withIS:516.

10.1.2 Test cubesshallbemadeas,where andwhenthe JDAmayrequire.

10.1.3 Testcubesshallbemadeunder the directsupervisionofthecompetentpersonappointed by teh Contractor to supervise all stages of the preparation and placing ofconcrete. They shallbemadeby theContractorinthepresenceoftheJDAgenerallyfromconcretetaken atthepointofdischarge fromthemixerandtheContractorshallprovide suitablefacilities in the form of a hutor othercoveredprotection as agreedwithor directed by the JDA for the staring and curing of the testcubes during the first24 hours after making them

and untiltheyare dispatched to thetestinglaboratory.

10.1.4 Test cubes shall be marked and dated insuch amanner that the grade and the part ofthe worksin which the concretethey represent has been placed can be readilyidentified.

10.1.5 Testing shall be done at an approved laboratory at the site itself and the results shall besubmittedpromptlyby ContractortotheJDA.

10.2 WORKTEST

10.2.1 Whenconcreteofaparticulargradeisfirstusedintheworks,2cubesshallbetaken from3 separate batches during eachofthe first 7 days of using thatgrade.Ofthese6cubes9eachcuberepresentingconcretemadeofadifferent batch shall be testedat7 daysand theremaining 3cubes shallbetestedat28days.

10.2.2 For every subsequent 20 cum of concreteor foreverydays concreting bethelessin column, 6 cubes shall be made for eachgrade ofconcrete andtestedat7 and28daysasforsub-clause 10.2.1

10.2.3 Ifthe mean concrete strength determined from such28day cube tests doesnotreachthe characteristicstrength for that grade,the materialsand/or theirproportionsforthatgradeshallbemodifiedbytheContractortothesatisfactio noftheJDA.

10.2.4 Regarding testing, measurement and rates and any other item not specificallymentionedunderthesespecification,theprovisionofPWD(Raj.)spe cifications1998 withuptodatecorrectionslip shall apply.

10.2.5 In addition the Contractorathisownexpense takesuch action as theJDAmayconsidernecessaryontheconcreteplacedinthatpartoftheworksrep resentedbythesetofcubessofoundtobebelowthecharacteristicstrength.

11.0 WEIGHTBATCHING

11.1 UnlessotherwiseagreedwiththeJDAallconcreteingredientsexceptwaterforcontrolled concreteshall be weight batched using a platform (similar to one used forweightingluggage at railway station) weighting upto 200 kg to the nearest 100 gm oranyotherapproved typeofweightbatcher.

11.2 Batching shall be of an accuracy of not less than 1/2 kg and the weigh batchingequipment shallhavean accuracyof+ 3 percent. The weigh batches shall be testedfor accuracy of calibration before commencement ofwork and at least once a fortnightthereafter,ormorefrequently,ifsorequiredbytheJDA.

12.0 CONCRETEMIXING

12.1 Allconcrete whether ordinary or controlled, shallbe mixedinan approvedmixerfortheminimumtimenecessarytoensureadequatequalityanduniformdis tributionofthematerials.Thecementandaggregatesshallnormallybefirstmixeddryuntilal l particlesofaggregate are coated with cement after which the water shall beadded.

12.2 Allowance shall be made for the moisture content of the aggregates when calculatingtheamountofwaterto be addedforeachmix.

12.3 The temperature of the aggregate, water and cement when added to the mixer shall besuchthatthetemperatureoftheconcreteatthetimeofplacementislessthan40C.

12.4 Materials for concrete shall be deposited into the drum whileitis in rotation.

Mixersshall notbeloaded beyondtheirrated capacity and each batch shall be completelydischargedfromthe drum beforerecharging takesplace.

12.5 Facilitiesshall be provided to spray themixerdrum withcool water between batchesandonthecompletionofconcretingthedrumshallbewasheddown.Thesurfaceoft hemixerdrumshall be maintainedinacleancondition atalltimes.

12.6 Retempering and/or mixing of concrete which has partially HARDENED and set will notbepermitted underanycircumstances.

13.0 TRANSPORTING

13.1 The period between mixing the concrete and placing it inthe final position shall bekept to aminimumand the delivery of concrete shall be co-ordinated with the rate ofplacementto avoid delaysin deliveryandplacement.

13.2 Concrete shall be handled from the place of mixingto theplaceof final deposit bymethodsthatpreventsegregation,lossofingredientsandcontaminationandmaintainth erequired workability.

13.3 Shouldanysegregationhaveoccurredinanybatchesarrivingattheplaceofdeposition,suc hbatchesshallbedepositedandthoroughlyturnedoverbyhandbeforeplacingintheworks.

13.4 Where concrete is conveyed by chutes, the chutesshall bemadeof metal or fittedwithmetallinings.The approval of the JDA shall be obtained for the use of chutes inexcess of3 metres longand in suchcases theconcreteshall be remixed ifsorequiredbytheJDA.

13.5 Allplant and equipment used in the transportationof concreteshall be thoroughlycleaned before andafter eachworkingperiod and at allchangesof concrete mixes.Water used for this purpose shall be discharged willclearof formwork or theconcretealreadyin place.

14.0 PREPARATIONBEFORECONCRETING

14.1 The inside surface of the forms against whichconcrete isto be placed shall be cleanand free from driedor hardened spattering or coatings of concrete. Theforms shall bewellwetted beforeplacing concrete.

14.2 When the work has to be resumed on a surface, which has hardened, suchsurfaceshall be roughened.It shall then be swept clean, thoroughly wetted and covered with12mmlayer of freshly mixed mortar composed ofcement andsand (in the same ratioasthecementandsandintheconcretemix)immediatelybeforeplacingofconcrete.

15.0 PLACING

15.1 Concretingofanyportionoftheworksshallbedoneonlyinpresenceoftherepresentativeso ftheJDA.

15.2 Concreteshallbecarriedoutcontinuouslybetweenconstruction,contractionorexpansion joints, shown on thedrawings or agreed with JDA. The Contractor shallclosely follow the sequence of concretingwhere suchisspecified on the drawings. Ifconcretingisinterruptedbeforereachingthepredeterminedjointanapprovedconstructi onjointshall be provided.

15.3 Immediately before placing of concrete for columns and walls, the reinforcement withinand the old concrete at the bottom of the formwork shall be given a coatingof cementsandmortarof the identicalmaterialsand proportions to be used in the subsequentconcrete,topreventthelossoffinematerialfromtheinitialconcretepour.

15.4 Concrete shall be deposited as nearly as is practicable to itsfinal position and shallnot bedumpedin a largequantity at any point to be run or worked along

theformwork manually or with vibrators. Concrete shall not be deposited at a faster ratethanitcanbe placed and compacted.

15.5 Concreteshall be thoroughly worked into the forms so that they are entirely filled,reinforcing bars so that theyare entirely filled, einforcing barsadequately andtightlysurrounded and entrained air releasedfrom themass of concrete. Placing shall becarriedoutbyhandproddingaswellasvibratorsinamanner directedbytheJDA.

15.6 Theconcreteshallbeplacedinlayersnotgreaterthan300-mmthicknessanythoroughly compactedbefore succeeding layers are placed. Concrete shall beplacedinsingleoperation to the full thicknessofslabs, beams and similar members. Noconcrete shall beplaced onconcrete which has set sufficiently to causethe formationofplanesofweaknessandwheretheseislikelytooccurduetounforeseencircumstancestheproceduretobefollowedshallbeasforclause14.2ofthisspecification.

16.0 COMPACTION

16.1 Eachlayerof concrete whilst beingdepositedshall becompacted byapprovedmethodstoformadensematerialswithallsurfacefreefromhoneycombing,air holesorotherblemishes. The Contractorshalluse mechanicalvibration forallconcreteandshalltakecarethatinternalvibratorsshallnotbebroughtintocontact with the reinforcement or the formwork. Where external vibration of the forms is notadopted for fair faced surfaces, the concrete shall be manuallyvibrated adjacenttosuchsurface inaddition tointernalvibrating.

16.2 Anadequatenumberofvibrationsshallbeusedtoensurethatcompanionofconcreteis achievedwithin 10minutes of placing. Particular attention shallbe giventothe compaction of theconcrete aroundthe water barsto ensure that no voids orporous areasare left.

16.3 Compacting shall cease as soon as excess water appears on the face of concrete. Anywater accumulating on the surfaceof newly placed concrete shall beremovedbyapprovedmethodsand no further concrete shallbe placed there on until such waterhasbeenremoved.

16.4 Not with standing the requirements regarding mix design, should it be foundthat theproportion of water in the mixissuch thatlaitance formsbefore compaction (i.e.completion of expulsion of air) is completethe quantityofwater in the mix shallbereduced.No water shall be added to concrete after mixinghas been completed, butwhere the proportion of waterinthemix is such that it is impossibleto achievecomplete compaction,thequantitiesof cementand water. Whenever either ofl theaforesaidprocedures is to be adopted, an additional set of 6 cubes for testing at7 or28daysshall bemadefromthe adjustedmix.

16.5 The time elapsing between the discharge of the concrete from the mixer and thecompletionofcompactionshall notexceed30minutes.

16.6 A sufficient number of spare vibrators shallbekept readily accessible to the place ofdeposition of concrete to assure adequate vibration in caseof breakdown of those inuse.

17.0 FINISHES

17.1 All concrete surfaces shall have a good, dense finish. Except for slabs the exposedfacesofconcrete for which formwork is not provided shall be smoothed with a steel orwoodentowel toprovide afinishequaltothatfacewhereformworkisprovided.

17.2 The top surfaces of all floor and roof slabs specified as smoothshall be leveled andtrowelledbeforethe concrete begins to set to a smooth finish at the levels or fallsshown on the drawings. The toweling shall be done at such a time andin such amanner that an excess of mortar is not brought to the surface of concrete nor

theaggregate displaced. The top surfaces of concrete slabs specified to receive an integralfinishshallbeuniformlyroughenedbydeephackingbeforethefinishislaid.

17.3 Immediatelyafterstrikingtheformworkandremovinganysuperficialwater,honeycombed areasinnormal unfinished concrete shall be inspected by the JDAand,where directed, the Contractor shall immediately makegood at his own expensesuch honeycombing whilst the concrete is teill green to the satisfaction ofthe JDA. Allair holes shall besimilarlyfilled in.

17.4 TheContractor shall be responsible forprovidingan adequate key in concrete whereplastering orrendering isspecifiedto be applied. Hacking of the concrete surfaceimmediatelyafterstrikingtheformworkwillbe permitted.

17.5 Thefaces of all fair faced concrete shall be of even colour throughout, freefromairbubbles,cracks,honeycombingorotherblemishesandwill beinspectedbytheJDA immediately after the formworkhas been struck. Such faces shall not be rubbeddownafterstrikingtheformworktoremovefins,excrescenciesoranysimilarimperfections withoutthepriorpermissionoftheJDA.

17.6 Concretesurfacefinishesshallaccordto the requirements and all instructions bytheJDAwithregardtothemethodofachievingsuchfinishesshallbeimplemented.

18.0 CURINGANDPROTECTING

18.1 Walling on concrete shall not be permitted for atleast 24hours after it has been placedinpositionorforsuch additionallengthoftime asthe JDA.

18.2 Immediatelyaftercompaction andcompletionofany surface finishes, the concreteshallbeprotectedfromtheevaporationofmoisturebymeansofpolythenesheeting,wet hessian or other similarmaterialkept soakedbyspraying. Assoonasthe concretehas attained a degree of hardening sufficient towithstand surfacedamage moist curing shall beimplementedand maintained for a period of at least 15days aftercasting.

18.3 Methodofcuringandtheirdurationshallbesuchthattheconcretewillhavesatisfactorydurability and strength and members will suffer efflorescence and will notcausebyitsshrinkageundue cracking in the works.

18.4 The top surfaces of slabs and other horizontal surfaces shallbe cured by impoundingwaterincementmortar bunds.Steeplyslopingand verticalformedsurfaces shallbekeptcompletelyandcontinuouslymoistpriortoandduringthestrikingofformworkbyapplying water to the top surfaces and allowing it to passdown betweentheformworkandtheconcrete.

18.5 The Contractor shall give careful consideration to the curing methods and conditionsfor fair facedconcrete. Components,whichare specifiedtohave exposed concretefinish,shallreceivethesame curing treatment. Moreoverwater used forcuringshallbeclean soas nottodiscolourtheconcrete.

18.6 All fair-faced concrete shall be protected fromdamage fromthe time of striking theformwork.Alledgesandsurfacesofsuchconcreteshallbeprotectedfromchippingusing notched timber corner pieces or other suitablecovers, which shall bemaintained,inplace until the completionofthe work.

18.7 TheContractorshallberesponsibleforensuringall fairfacedconcretefreeofstainsfromconcrete materialsandshall clean all suchstainingasmay occurathisowncostassoonaspossible tothe satisfactionoftheJDA.

VacuumDewatering

C.C.pavementofminimummixM-35withreadymixedconcretefrombatching plant. The ready mixed concrete shall be laid and finished withscreed board vibrator, vacuum

dewatering process and finally finished byfloating, brooming with wire brush etc. complete as per specifications anddirectionsofEngineer-in-charge.

Material

Allmaterialsofconstructionlikecement,aggregate, sand, wateretc.

Cement is particularly suitable as binding agent. Cement contentshall be at the lowest limit. The total filler content consisting of cement andfineparticle,shallbelimitedtoaminimum.Thisfactorisofforemostimportancebothfo rthevacuum andforthereduction ofshrinkage.

GradeofConcrete

Minimum grade of concrete used shall be M-25 conforming to IS-456. OnlyDesign Mix Concrete shall be used. For other details like proportioning,batching,mixing,placing,curing etc.

SpecialRequirement

Allworkscoveredbythisspecificationshallbecarriedoutbyanexperiencedagencyhavin gexpertiseinvacuumdewateringconcretesystemaftergettingthesameapproved.Only skilledandexperiencedoperators shall be employed for the purpose. Prior approval of the agencyshall be obtained from the JDA before starting the work. All the equipmentshallbeofapprovedandproventypes andsuitablefortheworkinvolved.

Concrete laying pattern shall be decided in consultation with the JDAandwith his approval. The maximum width of a slab strip shall not generallyexceed 4 meters and minimum number of construction joints shall be used.Alternate slab strips shall be sequentially laid. Any damage to the alreadyfinished top surface shall be avoided. At construction joints nooverflow ofmortal or slurry on the already hardened surface shall be allowed whileconcreting the intermediate slab strip. Such construction joints shall bemarked with a thread in a straight line while the concrete is still green.Continuity ofreinforcementshall be maintainedwhilelayingconcreteinslabstrips.Edgesatexpansionjointsshallbeprotecte dandproperarrangementofshear-transfershallbe providedstandards.

ForConcretecompactionafterplacingconcreteinposition,itshallbevibratedthoroughly usingpoker/needlevibratorsandthereafterleveledwith surface vibrators to produce a homogeneous and smoothconcretesurface.In order to achieve a smooth surface to the satisfaction of theEngineering-in-Charge, surface vibrators shall be very carefully used byskilled operators. Over vibration resulting in excess mortar near the surfaceshallbe avoided.

Dewatering

Suction mats shall be spread over the leveled fresh concrete surface andshall be connected by suction hose to thevacuum pumps for De-wateringof surplus water in the concrete. During De-watering it shall be ensured thatnocement/cementslurryispumped out.

Floating andTroweling

This shall be done after De-watering by using skim floater (power floater.After this, surface shall be toweled with minimum two passes of powertroweltoachievea wearresistantsurfacetothe satisfactionoftheJDA.

Curing

However, all care shall be taken to avoid any stain any permanent stain onthe surface. Any stain or permanent marking on the top surface shall beremoved byapproved means.

Approach WorkingPlatform &Formwork

The Agency shall arrange all approaches, scaffolding, working platformsetc.forcarryingouttheentireoperationsafelyandinawork-man-likemanner. The working area shall be nearly maintained and all the facilitiesrequiredbytheJDAforpropersupervisionofthework shallbe provided.

The specification and method statement shall be submitted by the agencywellinadvancebeforethestartofexecution.Theexecutionshallbeallowedonlyaf terdueapprovalofJDA.

19.0 CONSTRUCTIONJOINTS

19.1 Constructionjoints shall be made only where shownon thedrawings.WheretheContractorwishestoform jointsinconcreteother thanthoseshownonthedrawings,heshall submit hisproposalsgivingthe position,formandtreatment ofsuchjointstothe JDAforhisapproval.

19.2 Verticalconstructionjointsshallbeformedagainstastopboardandhorizontalconstruction jointsshall be level.

19.3 Except where shown otherwise on the drawing, reinforcement shall continue throughconstructionjoints.

19.4 As soon as possible after the formwork has beenstruck forvertical joints or after theconcrete hassetin horizontal joints, the surface laitance of the hardened concreteonthe face of the joint shall be removedto exposethe coarse aggregate in such amannerthattheloosenedparticlesofaggregateanddamagedconcretearenotlefton the surface. The exposed face shallbe sweptclean of foreign matter and laitance.Feathered construction joints will not be permitted. Immediately before placingthenew concrete,neat cementgrout shallbepoured over the oldconcretefollowedforhorizontaljoints by a 12mm thickness ofsand cement mortar of the same materialsandproportionstobe used in thenewconcrete.

20.0 CONTRACTIONJOINTS

20.1 Contractionjointsrequiredwillbeasshownonthedrawings.

20.2 Constructionjointsshallnotbehacked,wettedormortaredbeforeconcreteisplacedagainstthem.

21.0 EXPANSIONJOINTS

Floor Joint of 50mm Gap (modular) Expansion joint system shall be relatedwith floor location as per drawings and wherever directed by Engineer-In-Charge. The jointssystemwillbe ofextruded aluminumbase members,self-aligning /self centering arrangement and support plates etc. as perASTMB221-02.ThesystemshallbesuchthatitprovidesfloortofloorWall/floor to wall expansion control system for various vertical locations in loadapplication areas that accommodates multi directional seismic movementwithout stress to its components. System shall consist of metal profiles witha universal aluminum base member designed to accommodate variousprojectconditionsand finishfloortreatments. The coverplateshall bedesigned of width and thickness required to satisfy projects movement andloadingrequirementsandsecuredtobasemembersbyutilizingmanufacturer'spre-engineeredself-centeringarrangementthatfreelyrotates/ moves in all directions. The Self - centering arrangement shallexhibit circular sphere ends that lock and slide inside the correspondingaluminum extrusion cavity to allow freedom of movement and flexure in alldirectionsincludingverticaldisplacement.ProvisionofMoistureBarrierMembraneint heJointSystemtohavewatertightjointismandatoryrequirement all as per the manufactures design and as approved by JDA.(Materialshall conformto ASTM6063).

RoofJointof50mmgap

Expansion joint system of approved make and manufacture for various rooflocationsshallbeprovidedasperapproveddrawingsandwhereverdirected by JDA. The joints shall be of extruded aluminum base memberswith,selfaligningandselfcenteringarrangementsupportplatesasperASTMB 221-02.The system shall be such that it provides water tight rooftoroof/rooftocornerjointcoverexpansioncontrolsystemthatiscapableof accommodating multidirectional seismic movement without stress to itscomponents.Systemshallconsistofmetalprofilethatincorporatesauniversalaluminu mbasememberdesignedtoaccommodatevariousproject conditions and roof treatments. The cover plate shall be designed ofwidth and thickness required to satisfy movement and loading requirementsand secured to base members by utilizing manufacturer's pre-engineeredself-centering arrangement that freely rotates/ moves in all directions. TheSelf centering arrangement shall exhibit circular sphere ends that lock andslide inside the correspondingaluminumextrusion cavity to allow freedomof movement and flexure in all directions including vertical displacement.The Joint System shall resist damage or deterioration from the impact offallingice,exposuretoUV,airbornecontaminantsandoccasionalfoottrafficfrommaint enancepersonnel.ProvisionofMoistureBarriermembrane in the Joint Systemto have water tight joint is mandatoryrequirement.(Materialshall confirmtoASTM6063.)

Application Procedure Expansion joint shall be provided as shown in theapproved drawing and as per direction of JDA. All joints shallbe cleanedand free from loose aggregates, the edges shall be in proper line. The jointshall be of the appropriate width as per the drawings. Provide continuousframe on each side of the joint, designed to support gasket and centre platewhere required. After installing the frames at both sides, place the centreplatein between the two frames and finally flush the gasketon the top oftheframes.Fixingofthejointafterproperassemblyofthecomponentsshall be through the proper stainless-steel counter skunked screws, whichshallbedrilledtothebaseconcreteslabbeams with a bondingagent.

The specification and method statement shall be submitted by the agencywellinadvancebeforethestartofexecution.Theexecutionshallbeallowedonlyaf terdueapprovalofJDA.

ArmourBoardfor Expansion

S.No.	Parameters	Units	Tes tRes ult	Tested asper
1.	WaterAbsorption	Kg/Sq.Mtr	0.45M ax	ASTM– 1575
2.	Density	Kg/Cu.Mtr	28Min	Do
3.	Compression Strength(25%Defl ection)	Kg/CmSq	0.21Mi n.	Do
4.	CompressionSet	%	25% Max	Do

5.	TensileStrength	Kg/Sq.Cm	1.8Min.	Do
6.	Elongation	%	60 In	Do

Joint Providing armour Board of approved colour shall be provided betweenexpansion joints, thickness built up using 10mm specifically extruded highperformancesheetminimumdensity28kgpercumandcompression strength0.21Kg./SqmwhentestedasperASTMD-3575including using double sided adhesive tape of 25x25x2 mmat four placesper Sqmto the casted surface to form the expansion joint and will becomeone side ofthe shuttering whilethe expansion joint is being created,including cost of all materials, Transportation, cutting and placing to therequired size, labour charges, sundries, wastage etc.at all levels completeasperdrawingsandasperdirectionofJDA.

(50 mm thick) Technical Specification of Armour BoardLaying Procedure

While creating expansion joint the armour board will become one side ofshuttering. To hold two free sides of shuttering a MS bolt of 12mm dia withboth sides threaded will be used at every 1 Mtr interval with matching nutswith concrete sleeve 50mm x 50 mm. This bolt shall be taken out & hole ofsleevebe groutedafterwards with cementmortar.

When forming expansion joint with armour board in in-situ concrete, joint-sealingslotsshallbeformed inthefollowingmanner.

The armour board is to become one side of shuttering. Cut off a strip ofarmour board equal to D. Further, cut the strip along the joint length intotwo.

The depth of top strip shall be = (1.25 W or W + 5mm whichever is less) +(W/2or15mmwhicheverisless)andthebottomstrip=(D-topstrip),whereD=slotdepthinMM&W=slotwidthinMM

Pin the top strip back on to the bottom strip using nails at two-inch intervals.Ensure that the slot is clean and dry Install a strip of filler material on top ofarmourboardflushwithfinishedsurfaceusingeitheraseparationTape/syntheticrubber-based adhesive.

Just prior to sealing pull off the top strip to create an uncontaminatedsealingslotsreadyforpreparation & sealing.

21.4 OPENJOINTFILLERS

21.4.1 Whereshown on the drawings openjointsin thestructure shall be filledwithoneofthefollowingofexpansion jointsfillers:-

a) Ininternalareasamaterialconformingto IS:1838containingbitumenemulsionfibresorcockgranulesbound togetherwith naturalresin.

b) Inexternalareasamaterialcomprisingclosedcellrubberorcontainingcockgranulesboundtogetherwithnaturalresin.

21.4.2 The joint fillershall be easily anduniformly compressibleto itsoriginal thickness,stoppable,easilycutorsawn robustdurable, resistant to decay dueto termiteorweatheringunaffected bywater and free of any constituent which willbleed into orstaintheconcrete.

21.4.3 Thejoint filler shall be of samethickness of the joint width, it shall extend through

thefull thickness of theconcreteunless otherwise specified and shall be sufficientlyrigidduringhandlingandplacingtopermittheformation ofstraightjoints.

21.5 JOINTSEALINGCOMPOUNDS

21.5.1 Joint sealing compounds shall seal jointsin concrete against the passage ofwater, prevent the ingress of grit or other foreign material andprotect the jointfiller.Thecompound(SiliconesealantNitoseal125orequivalent)surfacessh allberesistanttoflowand weathering.

22.0 INSERTS

22.1 TheContractorsshallfixallnecessaryinsertssuchassteelplates,pipesleeves,boltsetc.an dmake provisionofholes,pockets, dowelsetc.in the formworktoenablesubsequentfixingof supports, brackets, ceilings precast members etc. Asindicatedonthe drawings,orasrequired bytheJDA.

22.2 In-situ concrete inserts shall be as per IS:1946 and of atype approvedby theJDAunlessotherwise specified elsewhere.

22.3 Nothingextra over and above the provision as perthe priced scheduleof quantitiesshallbepaid totheContractoronthisaccount.

22.4 Withtheprior agreementoftheJDAexpansion typefasteners maybeusedbytheContractorin hardened concrete.

23.0 CRACKS

23.1 If any cracks develop in the reinforced cement concrete construction which in theopinionoftheJDAmaybedetrimentaltothestrengthoftheconstruction,theContractor at his own expense shall test the structural elementin question. If underthesetestloadsthe cracks shall develop further the Contractor at hisown expenseshall dismantle the construction, cart away the debris,replacethe construction andcarryoutall consequential worktheretoatnoextra cost.

23.2 Ifthe cracks are not detrimental to the stabilityof theconstruction in the opinion of theJDA,the Contractorat his own expense shall groutthe cracks withpneumaticallyapplied mortar or epoxygrout. At hisown expense and risk he shall also makegoodall other building works such as plaster, mouldings, surface finishoffloors,
roofs,ceilingsetc.whichintheopinionoftheJDAhavesuffereddamageeitherinappearanc eorstabilityowing to suchcracks.

23.3 Therepairworkshallbecarriedouttothesatisfaction of theJDA.Thedecisionofthe JDAasto the extent of the liabilityofthe contractorintheabovemattershallbefinaland bindingonthe Contractor.

24.0 LOADTESTINGONCOMPLETEDSTRUCTURES

24.1 During the period of construction or within the defect liabilityperiod the JDA may athisdiscretion orderthe load testing of any completedstructureor any part there of ifhe has reasonable doubts about the adequacyof the strength of such structure for anyofthefollowingreasons:

a) Resultsof compressive strength on concretetest cubes falling below the specifiedstrength.
b) Premature removalofformwork.
c) Inadequatecuringof concrete.
d) Overloadingduringtheconstructionofthestructure orparttherеof.
e) Carryingoutconcretingof anyportionwithoutpriorapprovalof the JDA.
f) Honeycombedor damaged concrete, whichinthe opinion of the JDA is particularlyweakand willaffectthe stability ofthe structureto carrythedesign load, more so inimportantorcriticalareas ofthestructure.

g) Anyother circumstances attributabletoalleged negligence of the Contractor, which inthe opinion ofthe JDA, may result in the structure or anypart thereof being of lessthantheexpected strength.

24.2 Alltheloadingtests shall be carriedoutbythe Contractor strictly in accordance withthe instructions of the JDA. Such tests should be carried out only afterexpiry ofminimum28 daysor such longerperiodasdirected bytheJDA.

24.3 Thestructureshould be subjected toasuperimposed loadequal to 1.25 times thespecifiedsuperimposedloadassumedinthedesign.Thisloadshallbemaintainedfora period of 24 hoursbefore removal. Duringthe test, test strongenough to take thewhole load shall be placed in position leaving agapunder themembers asdirected.

24.4 Thedeflection due to the superimposed loadshallbe recordedby sufficient numberofapproved deflectmeterscapable of reading upto 1/500 of acm and locatedsuitably under the structure as directed by the JDA. If within 24 hours of the removal ofthe superimposedload thestructuredoesnotrecover atleast75% of the deflectionunderthesuperimposed load, the test leading shall be repeated after alapse
of72hours.Iftherecoveryafterthesecondtestislessthan80%ofthemaximumdeflectionsh ownduring the second test, the structure shall be consideredto havefailedto passthetestand shallbe deemedtobeunacceptable.

24.5 Insuch cases the part of the work concerned shallbe taken down or cut out andreconstructed to complywith thespecifications.Other remedialmeasuresmaybetakentomakethestructuresecureatthediscretionoftheJDA.H oweversuchremedialmeasuresshallbe
carriedouttothecompletesatisfactionoftheJDA.

24.6 All costs involved in carrying out the tests andother incidental expensethereto shallbeborneby the Contractorregardless of the result of the tests.The Contractorshalltake down or cut out and reconstruct the defective works or shall make the remedialmeasuresasinstructedathisown cost.

24.7 In addition to the above load test,nondestructive testmethods such as core test andultrasonicpulsevelocitytestshallbecarriedoutbytheContractorathisownexpense if so desired by theJDA. Such tests shall be carried out by an agencyapprovedbytheJDAandshallbedoneunderexpertguidanceusingonlyrecomme ndedtestingequipment.Theacceptancecriteriaforthesetestshallbemutuallyagreed between theJDA andthe Contractor.

25.0 SUPERVISION

25.1 Allconcretingworkshallbedoneunderstrict supervisionof the qualified andexperiencedEngineeroftheContractoraswellasthoseoftheJDA.TheContractor'sEn gineerandsupervisor whoare in-chargeof concreting work shall beskilledinthisclassofworkandshallpersonallysuperintendalltheconcretingoperations.

25.2 Specialattentionshallbepaid tothefollowing:

a) Proportioning,mixing and quality testing ofthe materialswith particular controlonthewatercementratio.
b) Layingofmaterialinplace and thoroughcompactionoftheconcretetoensure solidityandfreedomfrom voids and honeycombing.
c) Propercuringfortherequisite period.
d) Reinforcementpositionsarenotdisturbedduringconcretingandconsolidationby Vibration.

26.0 QUALITYCONTROL

26.1 The JDA reserves the right to make changes in the mix proportions including theincreased cementcontent or/and a change in the Contractor's controlprocedure,should the quality control during progress of the works prove to be inadequate in hisopinion.

26.2 All the concrete work shall be true to level, plumb and squarewithin the acceptabletolerance.Thecorners,edgesandarrivesinallcasesshallbeunbrokenandfinishedproperlyand carefully.

27.0 TOLERANCES

27.1 Theacceptabletolerancesforformedconcretesurfacesshallbeasgivenbelow:

a) Variationfromplumbfor
i) Columns andwalls toberendered -6mmin3metres
ii) Exposedcolumns andwalls-3mmin3metres
b) Variationincrosssectionaldimensionsofcolumnandbeamsandinthethicknesso fslabs andwalls-6mm+12mm.

28.0 TESTINGROOM

28.1 Atesting room of not less than 10 sq.mequippedwith thefollowing apparatus andqualifiedconcretetechnician,labourandmaterialsrequiredforcarryingoutteststhereinshall beprovided bythe Contractorathisowncost:

1) Sieve set (For aggregate 20mm down)40mm dia45 cms
20mm dia45cms
16mm dia45cms
12.5mm dia45cms
10mm dia45cms
4.75mm dia 45 cms600micron dia20cms
300micron dia20cms
150micron dia20 cms
75 micron dia20cms

2) Weighting

a) Physicalbalancecap.200gms withweight box(accuracy0.5gms)
b) Counterscale cap.20kg
c) Weights

5kg....1no.	500gms .....1no.
2kg....2 nos.	200gms .....2nos.
1kg....1no.	100gms .....1no.

3) Slumpcones .....12nos.
4) 15 cmsmoulds. ..... 18nos.
5) Electrickeroseneheater
6) Pansetc.asdirectedbyJDA
7) VicatApparatuswithneedles,testtubes, beakersthickglassplateetc.
8) Measuringcylinders. .....1000ml,500ml,100ml,10ml.
9) Washbottles..Cap.500ml..2nos.
10) Sink
11) Workbenches,shelves,desksandanyotherfurnitureandlightingasrequiredbytheJDA.
12) Springbalance dial typecap.100kg
13) Litremeasures

a) 10lit.....1no.
b) 5lit.....1no.
c) 2lit.....2 nos.
d) 1lit.....1no.
e) 1/2 lit.....1no.

29.0 RATE

TheContractorrateshallincludethecostofmaterialsandlabourrequiredforalltheoperations described aboveatall depthsandheights.

APPENDIX - I

STANDARDCONCRETEMIX DESIGNPRESENTATION

GradeofConcrete :
CementContent&Type :
Water-CementRatio :
FreeWater :
Specifiedstrength@28days :CurrentMeanStrength :
Currentstandarddeviation :
Admixture type :
Admixture dosage :Slump @ 30 minutes/Slump @
:60minutes(inlaboratory) :
AirContent :
Chlorides(asNaCL)* :
Sulphates (asSO3)* :CombinedAggregategrading :

Sieve	75 mm	38.1 mm	19 mm	4.75 mm	2.36 mm	1.18 mm	0.600 mm	0.300 mm	0.15 mm	75 micron
%Passing										

*Totalinmix, expressedas apercentagebyweightof cement.

*****

E. FORMWORK

1.0 GENERAL

1.1 DESCRIPTION

Thissectioncovers the requirementsforproviding, fabricatingand erectingofformworkincluding propping, bracing, shoring, strutting, tying,bolting, wedgingandallothertemporarysupportstotheconcreteduringtheprocessofsettingsubs equentremovalofforms.

1.2 RELATEDWORKSPECIFIED ELSEWHERE

a) Cast-in-placereinforcedconcrete
b) Pre-castconcrete

1.3 APPLICABLECODESANDSTANDARDS

Thecodesandstandardsgenerallyapplicabletotheworkofthissectionarelistedhereinafter.
IS:456 CodeofPractice for plainandreinforced concreteIS:4990 Plywood forconcreteshuttering work.

2.0 SUBMITTALS

2.1 TYPEOFFORMWORK

Priortostartofdeliveryofmaterialforformwork,thecontractorshallpreparesamplesofdifferenttypes ofabout10sq.m.andobtainapprovalof theJDA.

2.2 DESIGNOFFORMS

Beforefabricatingofforms,thecontractorshall submitshop drawingsanddesigncalculationsfor proposedformwork to the JDA forhisapproval. However,theapprovaloftheformworkdesignisinnowaywillrelievethecontractorofhisresponsibility for adequately constructing and maintaining theforms so that they willfunctionproperly.

3.0 MATERIALS

3.1 Formworkshallbe oftimber,plywood,steelorany othermaterial capableofresistingdamagetothe contactfacesundernormal conditionsoferecting forms,fixing steel and placing concrete. The selection of materials suitable for formwork shallbe made by the contractor based on the maximum quality consistent with the specifiedfinishedand safety.

3.2 TIMBER

Timber used for formwork shall be easily workable with railswithout splitting. It shall bestableandnotliabletowarpwhenexposedtosunandrainorwettedduringconcreting.

3.3 PLYWOOD

Plywoodusedforformworkshallbe12mmthickphenol-bondedshuttering,qualityplywoodcomplyingwith IS:4990and ofmakeapprovedbytheJDA.

3.4 STEEL

Steelformworkshallbemadeof4mmthickblacksheets stiffenedwithangleironframemadeoutofM.S.angles 40 mmx40mmx6mm.

3.5 VERTICALPROPS

Verticalpropsused for formwork shall beofsteelpipesadequately braced. Theseshallbe strongenoughtobeartheloadduringconcreting operations withoutbuckling.

4.0 DESIGNCRITERIA

4.1 Formworkshall be designed for the loadsandlateral pressures due to dead weight ofconcrete,superimposed liveloadsof workmen, materials and plantsandfor otherloadsasindicatedonthedrawings.

4.2 Forms shall be designed to have sufficient strengthto carrythe hydrostatic head ofconcreteasaliquidwithout deflectiontolerances exceedingtheacceptablelimits.

4.3 Where necessary to maintain the tolerances indicated on the drawings,theformworkshallbecamberedto compensateforanticipateddeflectionsdueto the weightandpressureofthe freshconcrete,andalsoduetoany otherconstructionloads,Unlessotherwiseshownorspecified,thecambershall beprovidedasbelow:

Types ofmember	Compressionsteel as%oftensilesteel	Cambercoefficient
Simplespan	0%	0.066
50%		0.037
Continuous	0%	0.032
Restrained span	50%	0.020
Cantilever	0%	0.086
50%		0.046

Camberincms=KxLx2.54/D

WhereK=Cambercoefficient

L = Length of member in meterD=Depthofmemberinmeter

5.0 ERECTIONOFFORMWORK

5.1 FormsshallbeusedwherevernecessarytoconfineconcreteduringvibrationandtoshapeittothE requiredlines.The formworkshallconformtoshapes,lines,levels and dimensionsofthe concrete shownonthedrawings.

5.2 Formshallhavesufficientstrengthtowithstandthepressureresultingfromplacementandvibrationsof concrete and shall be maintained rigidly inposition.Formworkshallbe adequately supportedbyadequate numberandsize of struts,braces, ties and propsto ensure rigidly of forms during concreting. Whereprops restonnaturalor filled up ground,toavoidany settlement,the soil shall be thoroughlycompactedand basedofprops shall be of sufficient size soasto restrict the bearingpressureonthegroundto 5T/sqm.

5.3 Formsshall be tight enough to prevent loss ofmortar fromthe concrete andtoproducedense,homogeneous anduniformly coloured concrete completelyfreefromhoney combing or surface roughness. Joints informwork shall be designed to preventleakage, not onlybetween individualelements forming the panels butalso from thehorizontaland verticaljunctionbetween thepanelsthemselves.

5.4 If formwork is held together by bolts, or wires,those shallbeso fixed that no iron shallbeexposedon surfaceagainstwhichconcrete is tobelaid.TheJDA may at hisdiscretion allow the contractor to usetie bolts running through the concrete at hisowncost.Holesleft in the concrete by thesetiebolts shallbe filledas specifiedby JDAatthecontractor'sexpense.

5.5 Formworkshallbe constructed so asto facilitate looseningand permitremovalwithoutjarringthe concrete.Wedges, clamps and boltsshallbeused whereverpracticableinstead ofnails.

5.6 AllformworkerectedshallbeapprovedbytheJDAbeforeconcretingisstarted.

6.0 CLEANINGANDOILINGOFFORMS

6.1 At the time concrete is placed in the forms, the surface of the forms in contact with theconcrete shall be free fromencrustationof mortar, grout orotherforeign material.Temporaryopeningsshall beleft at the bottomof formwork to enable sawdust,shavings,wire cutting and other foreign material to beworkedout fromthe interior oftheformsbeforethe concreteisplaced.

6.2 Thesurfaceof the forms to be incontactwiththe concrete shall be coatedwith anapproved coating thatwilleffectively prevent stacking and willnotstain theconcretesurface.Aftereachuse thesurfacesofformsincontactwithconcreteshallbecleaned,well wettedand treatedwith form oil approvedby the JDA Lubricating(machine)oilsshall notbe used.

6.3 Immediatelybeforeconcretingiscommencedtheformworkshallbecarefullyexamined to seethatalldirt, shavings sawdust and other refuse have been removedand theformworkshall be wetted thoroughlytoprevent absorptionof water fromconcrete. The formworkshall bekept wet during concreting and for thewholetimethatitisliftinplace.

7.0 REMOVALOFFORMWORK

7.1 Formworkshall be removed carefully so astoprevent damageto the concrete.Wooden wedges onlyshallbe usedbetween the concrete surface and theformwhere forceisnecessaryto separatetheformfrom the concrete. Metal wedges,bars or tools shall not be used forthis purpose. Any concrete damaged in the processofremoving the forms shall be repaired inaccordance with the provision of concretespecifications.

7.2 AllnonsupportingformsshallbeloosenedandremovedduringregularworkinghoursandassoonasthE concretehas hardened sufficiently topreventdamagefrom the removal of the forms. All falsework andforms supportingconcrete beamsand slabs, or other members subject to directbending stress, shall not be removed orreleaseduntilconcretingoperations,the contractorshallconduct inspection andtesting,andallreportsthereonshall besubmitted insummaryformtotheJDA.

7.3 Unless otherwise permitted in writing by the JDA, theformsshall not be strippedinlessthantheminimumperiodsspecifiedinIS:456.However,theJDAmayincrea setheaboveifheconsidersitnecessaryforstructuralstability.

7.4 Noconstructionloads exceedingthecombinationof superimposed dead loads plusspecified live loadshall be supported on any unshared portion of thestructure underconstruction, unless analysis indicates adequate strength to support such additionalloads.

7.5 Formwork shallberemovedinsuchamannersoastoimpairsafetyandserviceability of the structure.It shallberemovedgraduallyto preventsuddenapplicationof loads to the concrete. All concreteto beexposedbyfromremovalshallhavesufficientstrengthsoasnottobedamagedthereby.

STRIPPINGTIME:

Forms shall not be struck until the concrete has reached a strength at least twice the stress towhichtheconcretemay besubjectedatthetimeofremoval offormwork.Thestrengthreferred to shall be that of concrete using the same cement and aggregates, with the sameproportionsandcuredunderconditionsoftemperatureandmoisturesimilartothoseexistingo nthework.Wherepossible, theformworkshallbe leftlongerasitwouldassistthecuring.

In normal circumstances and where ordinary Portland cement is used, forms may generally beremovedafterthe expiryofthefollowingperiods:

A]	Walls,columnsandverticalfacesofallst ructuralmembers	24to48hoursasmaybedecidedbytheJDA.
B]	Slabs(props leftunder)	3days.
C]	Beamsoffits	7days
D]	Removalof props underslabs: 1. spanningupto4.5M 2. spanningover 4.5M	 7days 14days
E]	Removalofpropsunderbeamandarche s: 1. spanningupto6m 2. spanningover 6m	 14days 21days
F]	Forcantilevers slabs andbeams	28days

For other cements, the stripping time recommended for ordinary Portland cement may besuitablymodified.

The number of props left under, their sizes and disposition shall be such as to be able to safelycarry the full dead load of the slab, beam or arch as the case may be together withany liveloadlikelyto occurduringcuringorfurtherconstruction.

8.0 REUSEOFFORMS

8.1 Immediately after the forms are removed, they shallbe cleanedwith a jet of water andasoftbrush beforetheyarereused.

8.2 Thecontractorshall not be permittedreuseofany forms,which in the opinion of theJDA hasworn outand has become unfit for formwork. The JDA may, in his absolutediscretion, order rejection of any formsheconsiders unfit for use intheworks,andordertheirremovalfromthe site.

9.0 RATES

9.1 Ratesquotedbythecontractorshallapplytoworkatallfloor levels/depths.

9.2 Regardingmodesofmeasurement,ratesandanyotheritemsnotspecificallycovered under these specifications, nomenclature of items and other conditionsfor this tender, the provisions oflatest PWD (Raj) Specification BSR, JDA BSR shallapply.

F. STEELREINFORCEMENT

1.0 GENERAL

1.1 This section covers the requirement for providing fabricating,delivering and placing inpositionand securingatlocationsby bindingor welding,ofreinforcements for in-situand precastnon-prestressedreinforcedconcretework.

1.2 Reinforcementsforconcrete may be fromanyofthe "Grades"of steel indicatedbelow, conformingtotherelevantIndianStandardsmentionedagainsteachitem:

GRADE	DESCRIPTION	CONFORMINGTO
Fe 250	MildSteel	IS:432(PartI)
Fe 490	Harddrawnsteelwire	IS:432(PartII)
Fe 415	Highstrengthdeformed/ RibbedSteel	IS: 1786
Fe 500	Highstrengthdeformed/ RibbedSteel	IS: 1786
Fe 550	Highstrengthdeformed/ RibbedSteel	IS: 1786

1.3 Reinforcing steel may be any of the following types:Type-I : Plainround bars(PR)
Type-II : Weldedwirefabrics(WWF)
Type-III : Coldtwisteddeformedbars(CTD)
Type-IV : ThermoMechanicallytreatedribbedbars(TMT)
Type–V : ThermoMechanicallytreatedribbedcorrosion resistantbars(CopperBearing)(TMT-CR)

1.4 Unlessspecifically shown in drawings or instructions issued in writting by JDA, steelof any gradeor type other than those specified in Clauses 1.2 and1.3 statedabove,shallNOT be usedforthepurposeofconcretereinforcement.

1.5 Type and grade of steel to be used in the work shall be verifiedbythe JDAandrelevantcontractdocumentsbeforeprocuring suchsteel.

1.6 Allsteelshallbeprocuredonlyfromoriginalproducers.Re-rolledsteelshallnotbeprocuredforthepurposeofusingthese asreinforcementinconcretework.

1.7 Every consignment of steel brought to the site ofwork forusein reinforcedconcretework,shallbe accompaniedbya certificate fromthemanufacturer giving thefollowingdetails:

a) Processofmanufacture.
b) Gradeandtypeonsteel.
c) chemicalcompositionofsteel.
d) Identificationmarkonsteel.

e) Resultsoftestsgivingyieldstrength,ultimatetensilestrength,elongationpercentage ongauge lengthof5 times the diameter ofthebar,bend andre-bendon minimummandrel diameter,bond strengthvalues,corrosiontestresultsandfatigue test results. All such certificates should be deposited with the JDA for his recordandreference.

1.8 Steels of Grade Fe 415,Fe 500 and Fe 550 may be Type- III(CTD bars), or Type - IV(TMT bars), or Type-V (TMT-CR bars), depending on the process employed by themanufacturer.Depending on the process,the chemical compositionof steel mayvaryfrom manufacturerto manufacturer.However, the manufacturer shallgive aguaranteethat when combinations ofdifferentgrades and different types of steel areusedin conjunction andareplacedin contact, thereisnobimetallic action causingenhancementofthe process ofcorrosion.

1.9 Sometests to re-confirm the mechanical propertiesof steel will have to be conductedon every consignment of steelreceived on site. Frequency of such testsshall be asfollows:

Foreveryconsignment of steelsupto100tonnesorpartthereof:

	TESTSTO BECONDUCTED	NO. OFTESTS
i)	Tensilestrengthtest	1 no. for each size withaminimum of2tests.
ii)	Bend Testfor:	
	Barssmallerthanandincluding	1 no. for each size withminimum20mmdia aminimum of 3tests.
	Barslargerthan20mmdia	1no.for eachsizewith aminimumof5tests.
iii)	ElongationTests	Minimum 2 nos. choosingone no. from any twodifferentsizes,ifapplicable.
iv)	Mass ToleranceTests	Minimum 3 tests with onenumber from differentsizes, ifapplicable.

Allsuch field tests shall be conducted at a NABL accriated laboratoryto be decided by theJDA. Contractor shall be obligedto conduct all such tests and the cost of these tests will haveto bebornebyhim.

1.10 Steelbrought to site shall be free from millscales, rust,grease, oil, paint or any othercoatings,which havedeleterious effect on the performance.Barsand wiresshall becleanlyrolledandshallbefreefromallsurfacedefectsdetrimentaltoitsuse.However, rust,seams, mill scales or minor surface irregularities shallnot be the causefor rejection. Such bars shall beproperly cleaned and re-tested as directedbytheJDA.TestsshallbeconductedinaccordancewiththerelevantIndianStandardSpecifications.

1.11 Basedontest results of fieldtests,specifiedin Clauses1.9 and 1.10 above, theJDA will bethe soleauthority to accept or reject the consignmentof steel and suchdecisionsshallnotbeinfluencedbytheresultsoftestsaspermanufacturer'scertificate mentioned inClause 1.7 above.

1.12 Steels of all grades and all types shall havemaximum carbon content of less than0.25%bymassforguaranteed weld ability.

1.13 SteelsofType-Vshallhavea maximumcoppercontentof0.30%bymass.

1.14 Steelof Type -II shall be manufactured inconformity withprovisions of IS: 1566 andshallbe certified bythemanufacturerassuch.

1.15 Foracceptabilityofsteel,testresultsshallcomplywiththevaluesgivenbelow:

STEELGRADE(Clause1.2)	Fe250	Fe490	Fe415	Fe500	Fe550
YieldStrength/ 0.2%Proof stress(Min)	250	490	415	500	550
UltimateTensileStrength(Min)	410	580	485	550	585
Elongation on gaugelength5 dia(Min)	23%	10%	14.5%	14%	12%
Mandreldiaforbend test(Max) a)Forbars upto&incl.20mm	2 dia	2 dia	3dia	4dia	5dia
b)For barsabove20mm	3 dia	2 dia	4dia	5dia	6dia
Mandreldiaforre-bendtest(Max) a)Forbars upto&incl.20mm	(Notapplicable)	5dia		5 dia	7 dia
b)For barsabove20mm	(Notapplicable)	7dia		7 dia	8 dia
Tolerance on nominal massof7.85g/cc.	+2%	+2%	+2%	+2%	-

dia-denotesdiameter

2.0 BINDINGWIRES

2.1 Bindingwire for steels of all grades and typesshall normally be black annealed steelwireconforming toIS:280.

2.2 Whenreinforcingbars aregalvanisedforcorrosion protection, the bindingwires tobe used in conjunction with such steel shall also be galvanised as wires to be usedinconjunctionwith such steelshall also be galvanised as per relevant specificationsgivenelsewhere.

2.3 Bindingwires that are to be used in conjunction with fusionbonded epoxy

coatedreinforcingbarsshallbe plasticcoatedasperspecificationsgivenelsewhere.

2.4 Nominalsizeofbindingwiresshallbeasunder:

a) For bars ofsizelessthanand including20mm:20gauge
b) forbarsofsizeover 20mm :18gauge

3.0 COVERBLOCKS

3.1 Coverblocksforreinforcementsshallbemadeoutofcementmortar.Crushingstrength of such coverblocks shallbeone grade richer than theconcreteinthemember where such coverblocksaretobe used.

3.2 Covertoreinforcementsmay alsobeprovided with reinforcing bars forming "Chairs"for seating of bars. Such chairs shall be fabricated out of scrap steelof lengths,whichcannotbeefficientlyusedasreinforcements.Unlessspecificallyindicatedi ndrawingsor permitted by JDA, Type - Vbarsor bars treated for corrosion resistanceshallnotbeusedforfabricating such"Chairs".

3.3 Coverblocksmade out of Neopreneorhighstrength plasticmay be used subject towrittenapprovalbeingobtainedfromtheJDA.

4.0 STORAGEOFSTEEL

4.1 Reinforcingsteelshall be handled andstoredina manner such that bending anddistortionofthebarsisavoided.

4.2 Allreinforcingsteel shallbestoredhorizontally aboveground level on platformsorotherapproved support,clear of any running and/or standingwater. Contact with soilshallnotbepermitted.

4.3 Barsofdifferentgrades,types andsizesshallbestoredseparately.

4.4 Reinforcingbarstreatedwithacorrosionresistantprotectivecoatingofanykindshall behandledand storedwith utmost care so as not to cause anydamage totheprotectivecoating.Suchbarsshall bestoredseparatelyfromothers.

4.5 Everystackofreinforcementstoredshallbeprovidedwithadistinctivelydisplayedidentific ationboard carryingthefollowinginformation:
a) Gradeof SteelasperClause1.2.
b) Typeof steelasper Clause1.3.
c) Nominalsizeof steel.
d) Typeof corrosiontreatmenttosteel,ifprovided.
e) Deliverybatchnumber anddate.

5.0 FABRICATION

5.1 Contractorshallprepare"BarBendingSchedules"forallstructuralcomponentsbased on drawings issuedfor construction. Such schedules shall be submitted to theJDA for his approval. Fabrication of reinforcements shall commence only on receivingapprovalof"BarBending Schedule"fromthe JDA.

5.2 Reinforcementsteelshallbecarefullycut/bentandformedtothedimensionsandconfigura tionsshowninthedrawingsandBarBendingSchedule.

5.3 Allcutting,bending,fixing,binding,etc.shallbedonegenerallyinaccordancewithIS:2502u nless otherwise specified herein.

5.4 Bendingdimension tolerances shall be as specifiedin IS: 2502. However,

cuttingtolerancesfor allsizesofbars andfor alllengthsshallbelimitedtoplus-minus 10mm.

5.5 All bars shall be bent cold using appropriate mandrel sizes. Dimensions of bends andhooksshall be asindicated in theschedules.

5.6 Itshallbeensuredthatbarsarenotbentorstraightenedinanymannerthatwillinjurethe material.Any incorrectly bent bar shall be used only whenthebendsare set right,providedthatduringstraighteningand re-bending the bar, the barisnotdamaged inanywayincludingformation oftwistednecks.

5.7 Nobar shall be bent or straightened when inposition on the works without approval oftheJDA,whetherornot suchbarsarepartiallyembedded inhardenedconcrete.

5.8 Reinforcingsteelhavingareducedsection,visiblecracks,peelsoranyotherdefectsshall notbeusedforthe purposeofreinforcing theconcrete.

6.0 PLACEMENT

6.1 Allreinforcementshallbe placedaccurately and secured in position as indicated indrawings.

6.2 Tolerancesonplacingofreinforcementsshallbeasunder:

i)	OverallThicknessofmember	tolerance in spacingofbars
	a) Membersofthickness	+ 5mm300mmorless -
	b) Membersofthickness	+ 10mmmorethan300mm -
	c) Beamandcolumn elements	+ 2mm -

ii) Tolerance to clear concrete coverdimensions shall be plus-minusone-third the specified cover or5mmwhicheveris less.

6.3 Contractorshall provide approved type of supportsto reinforcing bars for maintainingthe bars inposition andtoensure required spacing and correctcoveras called for inthe drawings. Precast cement mortar cover blocks,chairsandspacerbarsshallbeused as appropriatefor this purpose. Forfairfacedconcrete work, temporary spacersshall only be used andthese shall be removed or withdrawn as compaction of concreteproceeds.Spacersshallnotbepermittedto beleftinfairfaces ofconcrete.

6.4 Allintersectionsofreinforcementsshallbesecurelytiedwithstandsofbindingwireasrequired,and twisted tight to make the skeleton or network ofsteel arigidframesothatthebarsdonotgetdisplacedduringtransportation,placementorvibration of concrete.Tack welding of reinforcements inplaceof bindingwithwire may bepermittedbytheJDAafterensuringthe weld abilityofsteel.

6.5 Contractorshalltake all necessaryprecautionsto ensurethat during handling anderectingofsteel,nodamage isdonetothefinishedconcrete.

6.6 Temporarywalkwaysandgalleriesshallbeplacedacrossreinforcementslaidinposition for purpose of movement of men and material. Such walkways and galleriesshall be independent of the reinforcement. No movement of men and material shall bepermittedonreinforcementslaid in andsecuredin position.

6.7 Without relieving the contractor of the responsibilities for the correctness of placing ofreinforcementsinaccordancewithdrawings,thereinforcementsasplacedandsecured in positionshall begot inspectedandapprovalobtainedfromthe JDAinwriting before any concrete is placedin the form. Contractor shall allow for sufficienttimetogetthereinforcementworkinspectedandanysubsequentremedialmeasurestobecarried out.

7.0 COVERTOREINFORCEMENTS

7.1 Unlessshownondrawingsorotherwisespecifiedorinstructedbythe JDA,minimumclearc oncrete cover to reinforcements shall be maintained as per IS: 456fornormalstructures,andasperIS:3370forwaterretaining structures.

7.2 Careshallbetakentomaintainthecoverstotolerancelimitsspecifiedearlierin Clause 6.2 above.

8.0 SPLICING

8.1 Asfaraspracticable,barsofmaximumavailable lengths shall be used. All barsshall preferably bein single lengths.Wheresuch arrangements are not possible,bars shall bespliced together.

8.2 Splices may be lapped splices or welded splicesunless specifically shown on drawingsor conveyedinwritingbythe JDA,welded spliceshallnotbeprovided.

8.3 Where welded splices are indicatedindrawingsor instructedby the JDA, suchweldingshallbeprovided as specifiedinapproved drawings.

8.4 Wheredetailsand specificlocationsofsplicingsarenotshownindrawings,lapsplicesshall be soprovided that:

8.4.1 Atany section not more than 50% of totalnumber ofbars are spliced togetherat anyfaceofthemember.

8.4.2 Fromtheendofonesplicetothebeginningofthenextspliceintwocontinuous bars, thereisa clear distance of 300 mm or 12 times thediameterofthe barwhicheverisgreater.

8.5 Lengthsofsuch lapsplices shall be asgiven inTable 6.5.1

TABLE6.5.1

STEELGRADE	STEELTYPE	SPLICE LENGTHS FOR GRADES OFCONCRETE IN MULTIPLES OF NOMINAL BARDIAMETER			
		M-25	M-30	M-35	M-40
Fe 250	I	40	36	32	30
Fe 490	II	76	71	63	56
Fe 415	III/IV/V	40	38	33	30
Fe 500	III/IV/V	50	45	40	36
Fe 550	III/IV/V	53	50	44	40

8.6 SplicelengthsgiveninTable6.5.1areforsteelsthatdonothaveanycoatingonthesurfaceaf fectingits bond strength.

8.7 Irrespective ofvaluesobtainedfromTable6.5.1,minimumsplicelengthshallbe300 mm.

8.8 Whenbarsoftwodifferentdiametersarespliced,thesplicelengthshallbebasedonthesmal lerofthetwodiameters,unless otherwiseshown indrawings.

READYMIXCONCRETE

BatchingofConcreteingredients:Forallstructuralconcreting,onlyReadyMixedConcrete (RMC)manufacturedwithweighbatchingplantorobtained fromapproved R.M.C. supplying agencies or produced at site using mechanical mixers and weighbatchers as per item description, will be used. The R.M.C. supplying agency will supplymix design details in advance before start of delivery Transporting, placing, compacting,finishingandcuringofconcrete shallbeinaccordance withIS:456-2000.

For all RMC concreting, the concrete after discharge from batching plant will be loadedin transit mixers and kept continuously agitated while mix is in transit. At destination themixwill beunloadedinto thehoppersofconcretepump.Forsite made concretesuitable prescribedmethodsshall be adopted.

The concreteproduced inRMCplant/batchingplant, whendischarged from transitmixer in pump hopper shall be kept continuously agitated and pumped to destinationplacing point. Site made concrete shall be placed by approved method of placing.The height of any single lift of concrete shall not exceed 1.5 m for walls and 2.0 m forcolumns.Forcolumnswheretheheightofpourismorethan2.0m,suitablearrangement in formworkshould be made so that the vertical drop of concrete isrestricted to less than 2.0 m. Any such arrangement should be approved from theengineerin advance before execution.

High velocity discharge of concrete causing segregation of mix shall be avoided. Theconcrete shallbeplaced inthe formsgently andnotdroppedfromtheheightexceeding
1.5 m except in columns where the maximum allowed will be 2.0 m. Each batch ofconcrete will be placed in layer. Each layer of concrete shall be compacted fully beforethesucceedinglayerisplacedandseparatebatchesshallbe
placedandfullycompacted before the layer immediately below has taken initial set. The layers shouldbesufficientlyshallow,topermitstitchingoftwolayers together byvibration.

Concreting of any portion or section of the work shall be carried out in one continuousoperation and no interruption of concreting work will be allowed without approval of theEngineer.

Plain concrete in foundations shall be placed, in direct contact, with the bottom ofexcavation,the concrete beingdeposited in such a manner,as not to getmixed withthe earth. The concrete placed below the ground level shall be protected from fallingearthduring
andafterplacing.Concreteplacedingroundcontainingdeleterioussubstances, shall be kept free from contact, with such ground and with water drainingthere from during placing and for a period of 7 days or otherwise instructed there after.Approved means shall be taken to protect immature concrete from damage by debris,excessive loading, abrasion, vibrations, deleterious ground water, mixing with earth andothermaterialsandotherinfluences,thatmayimpairstrengthanddurabilityofconcrete .

Before starting of work contractor will get the concrete pouring programme and itssequenceapproved byEngineertoavoid cold joints.

Proper planning of concrete supply, pump locations, line layout,placing sequence andtheentirepumpingoperationshallbemade.Theconcreteproduction,transportationa nd placing shall be planned in such a manner that duration between addition of waterduring mixingandplacingofconcreteindesiredlocationiswellwithintime limitsprescribed by the RMC manufacturer, however, this issubjected to fulfillment of slumpand other properties of concrete asspecified in tender. On failure to adherer to the timeschedulebythe supplierthe Engineermayrejecttheconcrete.

The pump wherever used should be as near the placing area as practicable, and theentiresurroundingareashallhaveadequate bearingstrengthtosupportconcretedelivery pipes. Lines from pump to the placing area should be laid out with a minimumof bends. For large placing areas alternate lines should be installed forrapid connectionwhen required. Standby power and pumping equipment should be provided to replaceinitial equipment, should breakdown occur.The placing rate should be estimated so thatconcretecanbe ordered atanappropriatedeliveryrate.

Asafinalcheck,thepumpshouldbestartedandoperatedwithout concretetobecertain that all moving parts are operating properly. A grout mortar should be pumped into the lines to provide lubrication for the concrete, but this mortar shall not be used in theplacement.

When the form is nearly full and there is enough concrete in the line to complete theplacement, the pump shall be stopped and a go-devilinserted and shall be forcedthrough the line by water under pressure to clean it out. The go-devil should be stoppedatasafedistance fromtheendofthelinesothatthewaterinthelinewillnotspill into the placement area. At the end of placing operation, the line shall be cleaned in thereverse direction.

1.0 **STONEMASONRY:**

1.1 Jaipur issurroundedbyabeltof Aravalihillshavinggoodqualityof 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.

1.2 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.

1.2.1 BED&JOINTS:

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

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

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

1.2.4 QUOINSORCORNERSTONES
Facesbedstobesquaredbackcarefullyatleast100mmandjoints65mm.

1.2.5 HEARTING
Stonestobenotlessthan150mminanydirection,carefullylaid,hammereddownwith woodenmalletinto placeand solidly beddedwithmortar,chips and spalls being wedgedintovoid thickbeds ofjoints andmortar.

2.0 **BRICKMASONRY**

2.1 Brickshould be soaked in water for at least onehour beforeusefor works incementmortars.Thebricks shouldbe sufficiently soaked before use but not excessivelyso.The absenceofbubbling whenthesoakedbrickis immersed in water is the test forthoroughsoaking.

2.2 BrickworkshallbelaidinEnglishBondusingfirstclassbricksdesignation75.Halfor cut bricksshall notbeused except where necessarytocompletethe bond.Allcourses shall be laid truly horizontaland allverticaljointsshall betrulyvertical.Thethicknessofmortarshallbekeptuniform,keepingthe bricksfrog upwards.

3.0 **HALFBRICKMASONRY:**

Half brickwork–plainorreinforced.

115 mm thick brick work shall be called as half brick work. It shall be built by layingbricksinstretcherbond.Mortar shall beasspecifiedintheScheduleofRates.

These walls may be used for forming cavities or partition walls inside buildings. Brickworkshall bereinforcedwitheitheroffollowingmethods:

1] with6mmdia.Bars,2bars ateverythirdlayer.

2] GImetallath/GIhoopiron25mmx1.6mmshallbeusedateverythirdlayerasdetailedbylayeras detailed bythemanufacturer.

3] Patti Beams of 115 x 150 mm high in M 20 grade concrete shall be casted. Beam shallbe reinforced with 2 nos. 8 mm dia Tor bars and 6 mm dia. MS links at 300 mm C/C.Pattibeamsshall be atevery1000 mmintervalin height.

Embeddingofreinforcementshallbedoneverycarefully.Allprecautionsshallbetakensothat edgesarenotexposed, lapping of bars andlathshallbeproperandstaggered.

Measurementsshallbeinsquaremeters.Reinforcementandshutteringshallnotbemeasuredseparately.

RATE:

Thefollowingoperationsshallbeincludedinthebrick work :-

A] Rakingout joints for plasteringor for pointingdone asa separate processor forfinishingjointsflushas workproceeds.

B] Preparingtops andsidesof existingwalls andthelikeforraising.

C] Rough cutting and waste for forming gables, cores of arches, splays at caves and

thelikesandall roughcutting inthebodyofbrickwork,unlessotherwise stated.

D] Plumbingtoanglesandbattered surfaces.

E] Forming reveals to jambs where fair cutting on exposed faces is not involved.F]

Leavingholesforpipesetc.

G] Building-inholdfasts,airbricks,fixing bricksetc.

H] Building-in ends of beams, joists, slabs, lintels, sills, trusses etc.I]

Formingopeningandfluesforwhichnodeductionismade.

J] Bedding wall plates, lintels, sills, roof tiles, corrugated sheets, etc. in or on walls, if notcoveredin theirrespective trade.

K] Leaving chasesofsectionnotexceeding50cm ingirth.

4.0 WOODWORK

4.1 PLY/BLOCKBOARD

Allplyor block board shall be ofbestqualityof DURO/NATIONAL/ GREENLAMmake or equivalent. Allexposed blockboardedges shall have lippingoftimberasdirectedandnothing extra is payableforthesame.

Whendecorative ply/block board is used forfunneling or ceiling etc. the same shall beofmatchinggrains.

4.2 SCREWS

Allscrewsshallbeofbestqualitychromiumplated.BrassorsteelscrewsofNettlefoldmadeorequivalent.

4.3 LAMINATE

Laminatewhere specified shall be of matt finishof1.5mm thickness of approvedmake.

4.4 PAINTS

Thepaintsusedshallbeofapprovedshadeofmake-Berger/Dulex/ICI/Asianorequivalent.

4.5 TIMBER:

4.5.1. TEAKWOOD:

SuperiorclassTeak Wood,suchasBalarshah MalabarorDandeli.Itshallbeofbestquality availableinmarketand well seasoned.Itshallbe freefromnead knots, warps, cracks, shakes andsap wood. Wherever the word"teak wood" is specified in the schedule and/or drawings shall mean superiorclassteakwood asspecifiedherein above.

4.5.2. ISTCLASS DEODARWOOD:

Timbershall be of good quality and well seasoned.It shallhave fairly uniformcolour,reasonableuniform grains and shall be free from dead knot, cracks,shakes andsap wood.

4.5.3. KAILWOOD:

It shall be well seasoned out of sleepers devoid of any knots and should be ofuniformgrains.

4.5.4. TITOCHAPWOOD:

It shall be well seasoned. It shall have fairly uniform colour, grains and shall befreefromdeadknot,cracks,shakesandsap wood.

i. GENERAL:

a. Allblockboards and plywood shallbeNational/Duro makeIn cass due to non-availability orotherwiseany othermakeisto be used,JDAs priorapprovalshouldbe obtained.

b. Allthe exposed internal and external commercialface shallbe painted with twocoats ofsyntheticenamelpaint,overa coatofwood primer.

c. Allthe wooden surfaces touching the wall,floorand ceiling shall be treated withanti-termitetreatmentasperISI/PWDspecifications.

ii. PROCEDUREOFWORK:

a. Thecontractor shall arrange his operations such thatthey areconvenient andagreedto bytheJDA.
b. Heshall adhere to the time schedule presented byhimand shallcomplete to allsatisfactionoftheJDA.

iii. BUILT-IN-JOINERY:

Where joinery work is specified to be built in, it shallbe theresponsibilityof the contractortoensurethatthe joineryworks are set in plumb and true in lineandshall not bedamagedordisplaced bysubsequentoperations.

iv. PROTECTIONOFWORK

The Contractor shall be responsible for the temporarydoors andclosing in of openingsnecessary for the protection oftheworkduring progress. He shallalsoprovideandmaintainanyothertemporary coveringrequired for the protection of finished/unfinishedwoodwork thatmaybedamagedduringtheprogressofthework ifleftunprotected.

v. MAKEGOODDEFECTIVEWORK:

Thecontractorshallberesponsibleforanyshrinkagesorwarpingoranyotherdefectswhichmay appearin anyjoinerywork.

Alldefectiveordamagedworkshallbetakendownandrenewedorrepaired to thesatisfactionoftheJDA/InteriorDesignerswithoutanyextracharges.

vi. ANTITERMITETREATMENT:

Allthesurfacesshallbetreatedwith anti-termitetreatmentasperISIspecifications.

5.0

STEELWORKINDOORS/WINDOWS/VENTILATORS/BALUSTRADES,STILLS,GATE, PARTITIONSAND GLAZINGETC.

Steeldoors

Material

Steel used in the manufacture of rolled steel section shall conform to IS 1977 .Dimension andweightofrolled sections shall be asperIS 1038/IS 7452.rolled steel sectionsshall be freefromrollingdefectsandshallbesuitableforpunchingandwelding.Cord-eyes,pulleys,brackets and catch plates for spring catches may be of malleable iron or mild steel. Pivots andspringcatchesshall be ofnon-ferrousmetal.

CouplingsforbuildingsectionshallbeasdetailedinIS1038.theymaybemanufacturedfrom M.S.plate1.6mmthickandconformingtodimensionsofIS1038.alsotubularsectionsasdetailedin IS1081maybe usedforcoupling atvaryingangles.

MachinescrewsusedforbuildingshallconformtorelevantIScodes.WoodscrewsusedshallconformtoIS 451.

All bolts, nuts, screws, washers, fixing lugs etc. shall be suitably anti-corrosion

treated.Allpegstays,handlesandotherfittingsshallbebrassoxidizedor asspecified.

Frames shall be fabricated form sections approved sections cut to length and joints mitred.Framed shall be square and flat. Flash butt welding shall be adopted. The glazing sectionstennoned and riveted into frames. Intersections with vertical shall be broached and intersectionclosedbyhydraulicpressure.

Weldsshallbecontinuousandthroughoutthejoint.Notackweldpermitted.Weldsshallbegroundproperly.Weldshall bewithoutanycavities,cracks,cutsetc.

Compositeunitsshallbecoupledwithcouplingsections.Thesejointsshallbesealedwithmasticsealantstomakewaterand airtight.

Glazing shall be fixed from out side of frame with glazing clips in slots already provided. Glassshall be held in position by using putty conforming to IS 419. putty shall be well worked behindandabove glasstosecureglass suitably.Puttyshall be cutneatly.

Door shall be securely fixed in position to correct line, level and plumb. Position of unit shall beas approved by EIC. Normallyframes shall be 12 mm less allround than opening provided.Theyshallbefixedwithinmasonryandconcretebygroutingholdfastscrew/weldedtoframes.

Frames fabricated, checked cleaned and printed at shop. On fixing in position and completionof civil wet work, fixing of glazing and due cleaning they shall be painted with one coat ofprimer,two undercoatsand onefinishedcoatofenamelpaintsystem.

STEEL WORK FOR GRILLS, BALUS TRADES ETC.STEEL

All finished steel shall be well and clearly rolled to the dimensions and weight specified by ISIsubject to permissible tolerance as per IS 1852-1973. the finished materials shall be free fromcracks, surface flaws laminations, rough and imperfect edges and all other defects. Steelsectionsshall bewell protected.

The decision of Engineer regarding rejecting any steel section on account of any of the abovedefects shall befinaland bindingoncontractors.Structuralsteel workshallconformto relevant
I.S.Specifications.

FABRICATION

The steel sections as specified and as required, shall be straightened and cut, square andcorrect lengths and measured with a steel tape. The cut ends exposed to view shall be finishedsmooth. No two pieces shall be welded or otherwise jointed to make up the required length of amember. All straightening and shaping to forms, shall be done by pressure. Bending or cuttingshallbe carriedoutinsuch asmannerasnottoimpair strengthofthemetal.

WELDING ANDFIXING:

Wrought iron or mild steel work shall be forged clean from the anvil and neatly, soundly andperfectly finished to the dimensions specified. All welds, turns or sets shall be sound. Screwedwork shall have full internal and external threads. Holes shall be punched clean and burrscleaned off. All counter sinks shall be concentric. Edges shall be filled square and smooth. Allwelds shall be cleaned of slag and other deposits after completion including grinding to squareneatjoints.

GLAZING:

The glazing work shall be applicable to the wood / steel work. The contractor shall provide alllabour, materials and equipments required to complete the installation of all glass glazing andrelated items. The glass shall be of the type and quality as specified and directed by theEngineer and as per the relevant I.S. Specifications. The contractor shall cut the glass to thesizes as per approved drawings. Cracks, chipped or disfigured glasses shall not be accepted.The contractor shall have to replace all the brocken glasses if any at the time of completion oftheworkwithout anyextracost.Ifnotspecified4mmthickglasspanes shallbeprovided.

PUTTY:

Special metal sash putty of approved make conforming to IS:420-1953shall be used for fixingfor glass panes. Putty shall be applied between glass panes and glazing bar. Putty shall thenbe applied over the glass panel, which shall stop 2 to 3 mm from the sight line of the backrebate to enable the painting to be done up to the sight line, to seal the edge of the putty to theglass. The oozed out back putty shall be cleaned and from putty cut to straight line. Putty shallbepainted within2to3weeks,after glazingisfixed toavoiditscracking.

GLAZINGCLIPS:

Four glazing clips shall be provided per glass pane for a size larger than 30 cm x 60 cm for alltypes where the glass panes, size exceed 80 cm x 200 cm. 6 glazing clips shall be used. Incaseofdoors,windowsandventilatorswithouthorizontalglazingbars,theglazingclipsmaybe spaced according to the slots, in the vertical members provided the spacing does notexceeds30 cm,otherwise thespacingshall be30cms.

Wherever glass panel are to be provided inwooden members, the same shall be fixedwithteakwood beadingincludingnecessaryscrewsandputtyetc.asperdrawings.

6.0 ALUMINIUMWORK:Material:

Aluminiumalloystandardextrudedsectionsmanufacturedinthecountrybymajormanufacturers andare used for fabrication of Aluminium doors, windows, ventilators andpartition.Tee/anglesectionsareusedforframeworkoffalseceiling.Thechemicalcomposition and mechanical properties of these extruded sections should comply with therequirement ofIS733,IS1285,IS737.Aluminiumiscorrosionresistance, itis inerttosulphur.

Aluminium alloy extruded sections in different forms used in the manufacture of frames andshutters of doors and windows and supports for hand rails, wall facings, partitions and similarother applications, where surface finish is important and medium strength would suffice shallconformtoIS:733andIS1285.

Anodising:

Inindia,standardaluminiumextrusionproductsaremanufacturedbyaveryfewlargecompanies and the product mix includes a wide range of solid and hollow profiles with differentfunctionalshapesforarchitectural,transport,structuralglazing,curtainwalling,textile,ele ctrical industries, microlight, air craft etc. and also the products used in irrigation industry astubesforsprinklersystemandfortransporting wateretc.

Theextrusionareanodisedupto30micronindifferentcolourslikesilver,champagne,bronzeandbla ck.Afoolproofscaling system ensuresdurablefinishfor longlastingapplications.

AluminiumworkforDoors,windows,ventilatorsandCompositeUnits:

The aluminium doors, windows and ventilatorsshall be fabricated by reputed local work-shopsusing the aluminium extrusions manufactured by the renowned manufacturers., Mysore orsimilar concerns. Fabrication of doors, windows etc. on site by local labour employed by thecontractor shall not be permitted. The fabricated materials in ready to fix

position are subject toinspection by the JDA, who may call for necessary documents to confirm that only materialsfromreputedmanufacturershave beenusedforthefabrication.

Doors:

AluminiumAlloyExtrudedSections:

Dimensionsandweightpermetrerunofextrudedsectionsshallbeusedformanufacturingaluminium doors,windows,ventilators etc.asrecommended inIS:1948-1961.

GeneralSpecificationandTolerancesforAluminiumExtrusionsmanufacturedbyrenownedmanufacturers:

CircumscribingCircleDiameter(CCD)
[I] theproductrangecanbebroadlycategorisedasfollows:

a] for solids up to 190 mm.b] forhollowsupto135mm.

[II] Sectionswithhigher CCDcanalsobeproducedasperspecialinquiry.

Manufacturingtolerances:

DimensionalextrusionsarenormallymanufacturedasperIndianStandard/BritishStandardSpecifications.Specialtolerances shall bemutuallyagreedupon:

Toleranceoncut length:

[I] Thestandardcutlengthis3.66M.thetoleranceoncutlength shallbeasfollows:

Length	upto6metres	over 6metres
Tolerance	+ 5.00mm	+7.00MM

[II] Sectioncanalsobesuppliedin randomlengths between1500mmto5000mm.

Tolerance inweight:

Actualweightofsectionsdependuponthefunctionsliketolerancesandalloy.Generallyasectionwill be supplied ±10%weighttolerances.

Glazing:

SheetGlass,FrostedSheetGlass:

Sheet glass shall be flat, transparent and clear as judged by unaided eye. It may, howeverpossess slight tint when viewed edge wise. Sheet glass shall be of selected quality [SQ]
orordinaryquality[OQ]asperIS:2835.glassshallbefreefromcracks.Unlessotherwisespecifiedordinaryqualitysheetglass shall be used.

Dimensions:

Normal thickness and range of thickness of sheet glass shall be as per standard norms.Toleranceoncutsize [length andwidth]shall be±2mm.

Thicknessandweightof sheetglass

Normalthickness[mm]	Range ofthickness[mm][	Weight[kg/sqm]
3.0	2.8to 3.2	7.5
4.0	3.8to 4.2	10.00

4.8	4.6to 5.1	11.9
5.5	5.2to 2.8	13.5
6.3	6.0to 6.6	15.5

Sheet glass of 4 mm nominal thickness weighing not less than 10 kg/sqm shall be used forglass panel of area up to 0.5 sqm. for panel exceeding 0.5 sqm in area, the nominal thicknessofglasstobe usedshallbe as specified.

Glasspanesshallweighatleast7.5kg/sqmandshallbefreefromflaws,specksorbubbles.All panes shall have property squared corners and straight edges. The glass panes shall be socut that it fits slightly loose in the frames. In doors, windows and clerestory windows of bath,WC and lavatories frosted glass panes shall be used which shall weigh not less than 10kg/sqm.

Glazing shallbeprovidedontheoutsideoftheframes unlessotherwisespecified.

Fixing of glass panes shall be done with aluminium beading. Fabriucator shall drill appropriateholes for screws. Normally the beadings are fixed with screws spaced not more than 10 cmfrom each corner and intermediate not more than 20 cm apart. When the glass panes are fixedwith aluminium beading having mitred joints, epoxy resin or silicon sealent shall be appliedbetweenglass panes andsash barsandalsobetween glasspanesandthebeading.

Panelling:

Different types of panelling such as ply wood, block board, veneered particle board, fibre boardpanellingcan beusedforaluminiumdoors,windows and ventilators.

Measurement:

Framework:

Only after ascertaining that the aluminium doors, windows and ventilatorsfixed on site aremanufactured by reducing the width by 2.5 cm and height by 1.25 cm than the specified size ofdoors in the drawings issued for construction, the length of each extruded section used forfabrication of the door shall be measured correct to 1 mm. In case the sizes of doors that aremanufactured, happen to be the sizes specified in the drawings, only the theoritical dimensionsarrivedbyreducing theoverall sizes should be considered.

The weight of material used shall be calculated on the basis of actual weight of extrudedsectionsusedforfabricationandshallbecomparedwiththeweightsgiveninthemanufactu rer‘s catalogue. Subject to the condition that the variation in actual weight should notexceed ± 10% than the weightts specified in the manufacturer‘s catalogue. Payment shall bemade for the actual weight of the extruded section. The final weights shall be calculated in kgs.Upto two placesofdecimal.

Glazing:

Lengthandwidth ofopeningforglazinginsertsshallbemeasuredcorrecttoacm.

7.0 FLOORING

CEMENTCONCRETE:

Cementconcreteofspecifiedmixshallbeused
anditshallgenerallyconformtothespecificationforconcrete.

BASE:

Proper base to required slopes shall be prepared for laying the flooring. In case of flooringunder layer shall be of hard core and or cement concrete. If the cement concrete

flooring is tobe laid directly on RCC slab, the surface of the RCC slab shall be roughened with brusheswhile the concrete is green. Before laying the concrete the laitance shall be removed, thesurface shall be hacked and a coat of cement slurry at 2.75 kg/sqm on the floor area shall beappliedtogetagood bond between concrete and slab.

Thehardcoreshallconsistofbrokenstones./stoneblastof50mmandundersize.Theseshall be spread and laid on the prepared base and initially compacted manually. The surfaceshall then be checked for proper grade. The hard core shall be then compacted by mechanicalcompactors.

LAYING:

The specified thickness of cement concrete shall be laid in the pattern as approved by theEngineerandISISpecification. Wherevernot specified minimum thicknessof40 mmbeprovided.

The flooringshall be laid to the levelexceptwhere slopes arecalled forin the drawingsinwhich case the slope shall be uniform and arranged to drain off in the indicated outlets.Particular care shall be taken to ensure that all flooring Skirting / dado to perfectly match forcolour /texture/finish.

CURING:

Curing for cement / metal hardened flooring shall be done for a period of 10 days after the toplayer hashardened.Curingshall be donebyfloodingwith water.

POLISNHEDKOTAFLOORING:

STONESLAB:

The slabs shall be of selected quality, hard, sound and homogeneous in texture, free fromcracks, decay, weathering and flaws. They shall be hand or machine cut to the requisitethickness(25mm,ifspecified),sizeand shape asspecified.

Theyshallbeofevencolour andfreefromsoftviens,cracksandbrockenflaws ontop.

DRESSING:

Every slab shall becut to the required size and shape and fine chisel dressed on the side tothe full depth so that a straight edge laid along the side of the stone shall be in full contact withit. The side (edges) shall be table rubbed with coarse sand or machine rubbed before paving.All angles and edges of the slab shall be true, square and free from chippings and the surfaceshallbe true andplane.

PREPARATIONOFSURFACEANDLAYING:

The bed mortar should be of cement mortar 1:4 (1cement;4 coarse sand) of 20 mm thickaverage thickness having a minimum of 12 mm thickness and not more than 28 mm thicknessanywhere.Thisshouldbelaidonthesub-baseoffloor,aftercleaningthesameandthoroughly wetting. Neat cement grout of honey like consistency shall be spread on the mortarbedonasmucharea ascould becovered withtheflooringslabswithinhalfan hour.

The edges of the slabs to be fit jointed as required and the joints shall be buttered with greycement, with admixture of pigment to match the shade of the slab. The flooring shall be laidwithout variation incolourandthestonestobegradedtoachieve desireduniformity.

POLISHING &FINISHING:

A] First grinding with coarse grade carborundum stone shall be done.B] Secondgrinding shallbedonewith carborundumstone120.

C] Finalcutting withfinestoneof220-350grade.

GRANITE/MARBLESTONE:

Granite / marble stone shall be hard, sound, homogeneous in texture with crystalline textureand shall be uniform in colour and free from cracks, stains and weathering. The quality shall beas specified and approved by the Engineer. The slab shall be cut to the required shape andsize, fine dressed on all sides to the full depth. Front edge of the stone be rounded. Thesurfaces shall be machine cut or table rubbed and all edges and angles shall be true, squareand free from clippings. The laying, curing, polishing and finishing shall be as per specificationsdulyapproved bytheJDA.themortarbeddingthicknessshall be 20mm.

GLAZEDCERAMICTILES

Glazed ceramic tiles shall be laid on structural concrete slab or floor concrete slab. These willbetospecification.

Tiles do not require any special bedding as per terrazzo and stone floor tiles. But to achieverequiredslopesitisadvisabletoprovide,average20mmthickbeddingcementlayer.Overth is, tiles shall be laid on neat cement slurry. Tiles for skirting and dados shall be laid oncementmortar1:3backing plasterof12mmthickness.

8.0 PLASTERING

Allplasterworkshallbeexecutedinaworkmanlikemannerandshallbeofthebestworkmanship. All plastering shall be finished to true plane, without imperfections and squarewith adjoining work and shall form proper foundations for finishing materials such as paint etc.Groovesin plasteras specifiedin thedrawingsshallbe provided.

Masonry and concrete surface to which plaster is to be applied shall be clean, free fromefforescenedampand sufficientlyroughandkeyed toensureproperbond.

MORTAR

The mortar shall be used as specified in the nomenclature / drawings. In the absence of anyspecificmentionitshouldbecementmortar1:6forinternaland1:4forexternalwallsand1:3forcei lingplaster.

At all joints between concrete frames and masonry wire netting of required width shall beinstalled as required by the Engineer before plastering. Groove shall be provided between theceilingand wall plaster,ifso desired bythe
Engineer. Edges of all plastered surfaces shall be protected. The contractor shall preparesamples of each type of plaster work for approval by the Engineer before the commencementofplasterwork.

Allplastershallbecommencedfromthetopandworkedtowardsthegroundandnopatchworkshall bepermitted.

Mortarshallbeappliedtothesurfaceinuniformlayersslightlymorethanthespecifiedthickness.

FINISHING:

The surface shall be made even and finishing shall be completed with plaster‘s trowels as soonas possible. In any case, it shall not take more than half an hour after water has been added
todrymortar.Thefinishedthicknessshallbe12mmonsmoothfacesofinternalwallsand15mm average on the rough faces of walls and external walls. Thickness of ceiling plaster to beminimum6mmandmaybe increasedtogeteven and levelsurface.

Allcorners,anglesandjunctionsshallbetrulyverticalorhorizontalasthecasemaybecarefullyandn eatlyfinished.

Rounding of cornersandjunctionswhererequiredshallbedonewithoutanyextrapayment.

Noportionofthesurfaceshallbeleftoutinitiallytobepatcheduptolateron,workshallbecontinuouslytakenup.Theworkincludeprovisionofallgrooves, betweenvarioussurfaces.

WORKMANSHIP:

Preparationofmortarmix:

The materialusedinpreparationofplasteringmixesshallbemeasuredby volumeusinggauge-boxesorbyweight.

Whencementismeasuredbyweight,1440kg.ofmaterialshallbetakenequivalenttoonecubic meter.

Mixing:

Mixing shall be done mechanically. Each mortar batch shall be used within half an hour. Handmixing if permitted as special case shall be carried out on a clean watertight platform. Themixing operation shall be continued with addition of necessary quantity of water until a uniformappearanceandconsistencyofmortarisobtained.

Cementand sand shall be mixed dry in required proportion to obtain a uniformcolourandwatershall then beadded togettherequiredconsistencyoftheplaster.

Methodofplastering:

Surfaces to be plastered must be clean and free from dust, loose material, oil, grease, mortardroppings,stickingofforeignmatter,tracesofalgeaetc.itisveryimportanttoensurethatthere should not be any chance of the plaster getting abandoned due to presence of materialsharmfulforbonding.

Raking out of joints is expected to be carried out alongwith masonry but it should be checkedthoroughlyso astoreceive goodkey.

Walls should be sufficiently damp prior to plastering. Water from plastering mortar must not beobservedbymasonryunderanycondition.

Any unavoidable projections in masonry and concrete surfaces shall be chiseled back. Careshallbetakenthatsurroundingsurfacesarenotdamagedandreinforcement is notexposed.

Thickness of one coat should not be more than 15 mm and less than 8 mm for single coatfinishedplaster.

In case of multi coat plaster, sufficient time shall be allowed for the undercoat to harden (cured,driedand shrunkproperly) beforesubsequentcoatsareapplied.

Undercoatsshallbescratchedorroughenedbeforetheyarefullyhardenedtoformamechanicalkey.

The method of application is also important and hence it is recommended that the mix bethrownon thesurfaceratherthan stuck with trowel.Thisincreasesthe adhesion.

Scaffolding should be rigidallowing free and safe movement on the platform and it should beat sufficient distance or height from the working area. Scaffoldings with railing gives moreconfidenceto workersand improvethequalityofwork.

Actual plastering shall be undertaken only on the approval of theJDA. Plaster work shouldonlyfollowthe stepsmentioned below:

A] Surfacemustbethoroughlycleaned.
B] Plasterareamustbeprovidedwithleveldabsorspotsallowingworkingandcheckingwith2-3m straightedge.Depthofplastermustnotbelessthan8mmatanypoint.

C] Required concealing services must be completed and tested.D] Nofurthercuttingofmasonrymustberequired.

E] Repairs carried out to masonry or concealing work must be cured and dry.F] Surfacemustbesufficientlydamp.

G] Plasterdabsarecheckedforplumbandlevelbythe EICorhisrepresentative.

H] Joints, concealing and repairing areas must be covered with 20 gauge GI chicken meshaspertheJDA'sinstructions.

Corners,externalorinternalshallbefinishedalongwithfinalcoat.Itisadvisabletohaveroundedcorners.

Plastershallbecuredfor14daysbywetcuringexceptinneerufinishplaster.Duringthisperiodplaster shall beprotectedfromexposuretoextremesoftemperatureand weather.

Plaster shall be leveled and lined by aluminium hollow section, 2-3 m long (this will give evenand leveled surface). There shall not be more than 2 mm difference in level when checked with3 m straight edge. It is important that enough pressing and beating is done to achieve compactfillingofjointsandthattheareaisfullycompacted.

Finishing of plaster may be carried out with wooden float (randhas) or trowelled smooth withsheetmetaltrowelsasspecified.Careshallbetakentoavoidexcessivetrowellingandoverworkingofthe woodenfloat.

All corners, internal or external, shall be truly vertical and horizontal. These shall be finishedwith a proper template to achieve best workmanship for rounding and chamfering as specifiedor directed.

Plastershallbecuttocorrecthorizontalorverticallineattheendofthedayorifworkrequiresto besuspendedforanyreason.

It is advisable to limit the area of plaster to 15 sqm to avoid cracks due to thermal movementsof dissimilar material in contact, it is advisable to provide joints treated with groove or any otherdetails as suggested by the Architect / Engineer. These joints if not specified shall be treatedwith 150 mm wide reinforcing chicken mesh (approved by theJDA) fixed over joints by GInails and theareaplastered.

MEASUREMENT:

Thickness of plaster shall be the average depth of plaster as specified. But if extra thicknessoccurs due to bad quality of bricks, stones or blocks or due to bad workmanship, then therepairsrequirestobe carriedoutshall be atthecostofthecontractor.

A] Grooves,pattasincontinuationoflargeareasorplasterareasshallbeconsideredaspartoftheplasterandnotmeasuredseparately.

B] Isolatedareasandwidthbelow300mmshallbespecifiedanddetailedseparatelyintheSchedule ofratesandmeasured inrunning meter.

C] Ceiling plaster, includingribbedbeamslabshallbemeasuredinsquaremeters.

D] Beams andcolumnsincontinuation ofmasonryshallbemeasured insquaremeter.

Jambs,sills,coves,cornicesetc.shallbeapartofplasterandnotseparatepaymentshallbemadetowardstheseitems.

Deductions:

A] Deductionsfor anopening inplaster shallnotbefor arealessthan0.5sq.m.

B] Incasetheopeningareais0.5sq.m.to3.0sq,m.,only50%areashallbedeductedfrom eachside.

C] Incasethewidthofdoororwindowframesareequaltomasonry,fullareaofopeningshallbe deducted.

D] Incaseofopeningofareaabove3sq.m.eachdeductionshallbemade foropeningoneachfaceandjambs,sofits,sillsshall bemeasured.

RATE:(Ifapplicable)

Descriptionofitem,includeswherevernecessary,conveyanceanddeliveryhandling,unloading, storing, fabricating, hoisting, all labour for finishing to required shape and size,setting, fitting and fixing in position, straight cutting and waste, return of packings and otherincidentalcharges.

Levels and heights shall be as indicated in the Schedule .Preparationof

surfaceshallbeasapprovedbytheJDA.

Trimming off the projections on masonry shall be included in the

price.Scaffoldingandworkingplatformshallbe includedin theprice.

Materialsasdetailedandasrequiredtocompleteitemasspecifiedshallbeincludedintheprice.

Curingofplastershallbeincludedintheprice.

Cleaning of adjacent areas, windows, door frames etc. including masonry surface in exposedmasonrywork, shall be included in theprice.

Forming grooves for joints between beams / columns and masonry etc. shall be included in theprice. Any special treatment if detailed shall be measured separately and billed in Schedule ofRates.

ProvidingandfixingchickenmeshatjunctionofRCC,brickwork,edges,corners,chiseledand repaired brick work prior to plaster over concealed conduit etc. shall be as directed by theJDA.Itshall beconsidered asper ofitemand noseparatechargewillbe payable.

CURING:

Curing shall be started as soon as the plaster has hardened sufficiently. The plaster shall bekept wet for a period of a minimum of seven days or as directed. The finished surfaces shall besuitablyprotectedfromsun,rain and otherdamages.

SCAFFOLDINGS:

Forallplasterandpointingworkdoublescaffoldinghavingtwosetsorverticalsupportsshallbe provided. The supports shall be sound and strong tied together with horizontal pieces overwhichscaffoldingplanksshall befixed.

Any cracks which appear in the surface and all portions which should hollow or are found to besoft or otherwise defective shall be cut and redone as directed by the Engineer to match withthesurrounding surfaces.

NEERUPLASTERFINISH:

Neeru plaster is done to have better finished plaster surface. The mortar for punning shallconsist of one lime palti and one fine sand unless other-wise specified. The line palti shall bemade using fat time. The mortarshall be grinded in a mechanical mortar mill. The surface ofthe undercoat on which the Neeru plaster is to be done shall be left rough. The finishing shallbe applied when the under coat is still green. The mortar for finishing shall be appliedin auniform layer slightly more than 3 mm thick between gauged pads, with which to ensure aneven and uniformly thick surface by frequent checking with a wooden straight

edge. It shall befinishedtoan even andsmoothsurfacewith trowels.

All corner, angles and junctions shall be truly vertical and horizontal as the case may be andshall be carefully and neatly finished. Rounding or chamfering comers, arises, junctions etc.whererequiredshall bemade withoutanyextrapayment.

No portion ofthe surface shall be leftoutinitially to be patched up later on. The thickness ofthefinishedmortarshall notbelessthan 3mmthick.

9.0 PAINTING:

The followingspecifications coverthe painting and finishing ofall surface throughout theinterior and exterior of the building. Refer to schedule of finishes, for type of interior finish,exteriorfinishtosurfaceetc.contractorshallsupplyalllabour,materials,tools,ladders,scaffolding andother equipmentnecessaryforthecompletion andprotection.

All colour, tints as approved in the colour schedule shall be approved by the Engineer. Thecontractor shall use pre-mixed manufacturer'scolours and shall prepare painted samples ofthe colours selected and submit the same for approval by the Engineer. No work is to proceeduntil the Engineer has given his approval of the colour samples. For mixing of various shadesandcolournoextrashall be payable.

All materials used in the work shall be specified in brand and quality, as approved by theEngineer. Paints shall be ready mixed and all paints, varnishes, enamels, lacquers, stains,paste, fillers and similar materials must be delivered to the job site in the original containers,with the seal unbroken & label intact. Each container shall give the manufacturers name, typeof paint, colour or paint and instruction for reducing. Thinning shall be done only in accordancewithmanufacturersdirections.

All surfaces to be painted and floors in the rooms being painted shall be cleaned free of allloose dirt and dust before painting is started. All workwhere a coat ofmaterial has beenappliedmustbeinspectedandapprovedbeforeapplicationofthesucceeding specifiedcoat.

Each under coat shall be a distinct shade of the approved colour. All interior and exterior trim,doorframes,doorwindows,ventilators,shelving,cabinetworkshallbethoroughlyandcarefully painted on all surfaces and edges which will be concealed when installed. Suchsurfaces shall be clean, dry sanded and properly prepared to receive the paint, tops, bottomsandedges ofdoorsshall befinishedsameastherestofthedoor.

Where walls are specified to be painted, all columns arises, groove rough surfaces, reveals,soffitsreturns etc.shallbe included andnoextrashall bepayable.

WOOD:

Sand paper to a smooth even surface and then dust off and wipe clean. Touch up all knots andpitch pockets with shellac on interior wood and outside with sealer or exterior work. Afterpriming coat has been applied thoroughly fill all nail holes, irregularities and cracks. Use plasterwoodfillerforstained ornaturalfinishand puttyforpaintedwork.

PLASTERWORK:

Fill all holes, cracks and abrasions with plaster of paris, properly and applied cut smoothed offtomatchadjoiningsurfaces.Donotusesandpaperonplastersurface.Plastershallbeallowedto dryforatleast3 weeks.

STEEL&IRON:

All surfaces shall be washed with mineral spirits to remove any dirt or grease before applyingpaint. Where rust or scale is present, it shall be wire brushed and emery prepared clean. Shopcoats of paint that have become marred shall be cleaned off, wire brushed, and spot primedover the effectedareas.

Brick tile / brick work / concrete shall be allowed to dry for at least 30 days, then shall beprepared for paint by thoroughly removing all dirt, dust, oil lacquer, efforescence and otherdeteterious materials cracks, faulty joints and cavities in concrete shall be filled by applyingacementandsandgroutand cementtoproduceauniformevensurface.

No exterior painting shall be done in damp foggy or rainy weather, surface to be painted shallbe clean, dry smooth and adequately protected from dampness. Each coat shall be applied insufficient quantity to obtain complete coverage, shall be well brushed and evenly worked outover the entire surface and into all corners, angles, and crevies, allowed to thoroughly dry.Second coat shall exactly match final coats is started. Allow for atleast 48 hours drying timebetween coats for interior and 7 days for exterior work and if in the judgement of the Engineermoretimeisrequireditshall be allowed.

Finished work shall be uniform, of approved colour, smooth and free from runs, sags, defectivebrushes and clogging. Make edges of paint adjoiningother materials or colour sharp andclean, without overlapping plaster wood filler when it shall be wiped across the grain of thewoodand then with thegrain tosecure aclean surface.

All under coats of paint shall be tinted to the same or approximately the same shade as of thefinalcoat.

All interior plastered surfaces shall be washed down with solution consisting of 3 pound of zincsulphate pergallon ofwater.

Enamel or varnish finish / oil finish applied to wood or metal shall be sanded between coatswith fine sand paper to produce a smooth even finish. Varnished surfaces must be protectedfrom dampnessand dustuntil completelydry.

WHITEWASHING&COLOURWASHING:

PREPARATIONOFSURFACES:

Thesurfacesshallbepreparedthoroughlycleanedofmortardropsandforeignmatter.

LIMEWASH:

The wash shall be prepared from fresh stone white lime or manual or equivalent quality. Thelime shall be thoroughly slaked on the spot, mixed and stirred with sufficient water to make athin cream. The cream shall be screened through a clean course cloth and of chhatus of gumdissolved in hot water added for each of the cream. Water shall be added at the rate of aboutone gallon per kg. of lime to produce a milk solution. In case of colour wash pigment ofapprovedqualityandshade be addedwith the lime wash.

Whereverwhitewashingwithwhiting istobeapplied, sameshallbeasperI.S.code.

WHITEWASHING/COLOURWASHING:

The wash shall be applied with a brush. The coats being laid on vertically and horizontallyalternatively, each coat being allowed to dry before next coat is applied. When dry, the washshouldshowno signofcracking.

Noportioninthesurfaceshallbeleftout initiallytobepatcheduplater on.

For new work, 3 or more coats shall be applied till the surface present a smooth and uniformfinish,the lastcoatbeing appliedvertically.

DRYDISTEMPERING:

Dry distemper of the approved brand and manufacturer shall be used. The shade shall be gotapproved from the Engineerbefore application. The dry distemper shall be prepared andmixedas perapprovedmanufacturersspecificationsand instructions.

The surface shall be thoroughly brushed free from mortar dropping or other foreign matter andsand prepared smooth. New plaster surface shall be allowed to dry before applying as perdirection and satisfaction of Engineer. Filling in plaster shall be made good with plaster of parismixed with dry distemper ofthe colour to be used. The surface shall be rubbed down againwithfinegradesand paper andacoatofdistempershallbeappliedoverthepatch.

A primingcoatofwhitingshall beoverthepreparedsurfaceincaseofnew work,ifsostipulated in the description for the item. No white washing coat with lime shall be used as aprimingcoat.Thetreatedsurfaceshallbeallowedtodrybeforethedistempercoatisgiven.

Thetreatmentshallconsistofaprimingcoatofwhitewashingfollowedbytheapplicationoftwo or more coats or distemper till the surface shown an even colour. The application of eachcoatshall beasfollows:

The entire surface shall be coated with mixture uniformly with proper distemper brushes inhorizontal strokes followed immediately by vertical onewhichtogether shall constituteonecoat. The subsequent coats shall be applied after the previous coat has dried. The finishedsurface shall be even and uniform and shall shown no brush marks and way surfaces. Enoughdistemper shall be mixed to finish one room at a time and application of a coat in each roomshall be finished in one operation. After each days work the brushes shall be washed in hotwaterand hung down todry.

WATERPROOFINGCEMENTPAINT:

Water proofing cement paint of approved brand and manufacture shall be used. The paint shallbe brought in sealed bags and the shade etc. shall be got approved from the Engineer. Thesurface shall be prepared thoroughly cleaned of foreign drops & foreign matter. All looseparticles shall be dusted off after rubbing. One coat of water proofing cement paint properlydiluted rubbing with thinner (water or other liquid) as stipulated in horizontal stroke followedimmediately by vertical one, which together constitute one coat. Subsequent coat shall beapplied in the same way after a time interval of at least 24 hours between consecutive coatsuntil an even shade is obtained. The surface shall be cured by keeping it wet by sprinklingwaterforatleast7 days.

TEXTUREFINISH:

High quality acrylic based texture sprayapplied in approved pattern appliedas intermediatefinish in desired pattern to form film thickness 1-1.2mm after scrapping and proper cleaning thesurface to remove loose particles from the plaster/RCC surface over a priming coat of exteriorprimerapplied at0.8litres

/10 sqm, followed by minimum two top coats with premium acrylic smooth exterior paint with100% acrylic content UV resistant properties, anti-algae additives and dirt pick-up resistance ofrequired shade complete as per manufacturer‘s specification. All layers should be of singlemanufacturer approvedbrand.

The agency shall supply all materials, labour, tools. ladders. scaffolding and other equipmentnecessary for the completion and protection of all texture work as herein specified shall beapplied to all surfaces requiring texturing throughout the exterior of the building as given in theschedule of finishes or elsewhere. The texturing shall be carried out by a specialist sub-contractor, approved by the JDA. Care is to be taken that all surfaces tobe textured arethoroughlycleaned anddry.

Storage of materials to be used on the job shall be only in a single place approved by the JDA.Suchstorageplace,shallnotbelocatedwithinanyof thebuildingsincluded inthecontract.

The paint shall be continuously stirred in the container so that its consistency is kept uniformthroughout.

Thepaintedsurfacesshallpresentuniformappearanceandsemi-glossfinishfreefromsteaks,blistersetc.

For new work, the surface shall be thoroughly cleaned off all mortar dropping, dirt dust, algae,fungus ormoth, grease and other foreign matterofbrushingand washing,pittingin plastershall make good, surface imperfections such as cracks, holes etc. shall be repaired using whitecement. The prepared surface shall have received the approval of the Engineer - in- chargeafter inspection before paintingiscommenced.

Before pouring into smaller containers for use, the texture shall be stirred thoroughly in itscontainer, when applying also the texture shall be continuously stirred in the smaller containerssothatitsconsistencyiskeptuniform.

The specification and method statement shall be submitted by the agency well in advancebeforethestartofexecution.The executionshallbeallowedonlyafterdueapprovalofJDA.

PAINTINGWITHSYNTHETICENAMEL/READYMIXED/EXTERIORPAINT:

Synthetic enamel paint (conforming to IS :1932-1964) / ready mixed paint / exterior paint shallbe ofapproved brand and manufacture and of the required colour shall be used for the topcoat and an under coat of shade to match the top coat as recommended by the manufacturershall be used.

Preparationofsurfaceshallbeasspecifiedforpaintingearlier:

Application:thenumberofcoatsincludingtheundercoatshallbeasunder:

a) Under coat: One coat of the specified paint of shade suited to the shade of the top coatshall be applied and allowed to dry overnight. It shall be rubbed next day with the finestgrade of wet abrasive paperto ensure a smooth and even surface, free from brushmarksandall loose particles dustedoff.

b) Top coat: top coats of specified paint of the desired shade shall be applied after theundercoatisthoroughlydry.Additionalfinishingcoatsshallbeappliediffoundnecessar ytoensureproperuniformglossysurface.

10.0 WATER PROOFING:INDIANSTANDARDS

Indianstandardstobefollowedare:

1.	IS 3384	Specificationfor Bitumenprimerforuseinwater proofing anddampproofing.
2.	IS 269	Specificationfor 33grade ordinaryand lowheat Portlandcement.
3.	IS 383	Specificationsforcoarseandfineaggregatesfrom naturalsources.
4.	IS 2645	Specificationforintegralcementwater proofing compound.
5.	IS 3495	MethodofTestforburntclaybuildingbricks.
6.	IS 8112	Specificationfor43gradeordinaryPortlandcement.
7.	IS 12118	Specificationfortwopartpolysulphidebased.
	Part I	GeneralRequirements.

PROPRIETORYTREATMENTS:

Terracewaterproofing(brickbat)

Various experienced water proofing specialists shall carry out the following or similar types ofwater proofing treatments. Terraces and roof slabs shall be treated with integral cement basedwaterproofing consisting of brick bat concrete laid to slope. The treatment shall be taken oververtical surfaces as required / specified. Final finished surfaces may be laid with paving tiles,stones as finished smooth in cement and marked with false chequered marking. Points givenbelow are just for guidelines. The actual steps and details shall be submitted by the contractorforapproval ofthe Engineer. Workshall be carried outas perapproved method

by theEngineer.

The surface to be treated shall be cleaned and well-defined cracks grouted by making ‗V' notches with the cementslurry.

Average 110 mm thick brick bat coba cement concrete treatment shall be installed. Surfaceshall be cleaned, grouted and cured brick bat of required sizes shall be layed on grouted areato slopes as shown in drawing. Further joints shall be grouted with cement sand mortar of mix1:6 and then finished with cement sand mortar mixed with waterproofing compound. Surfaceshall be finished smooth and false marking of 300x300mm tile pattern made. If other finishesareto beinstalled surfaces shall be preparedtoreceive the same.

Rainwater inlets, pipes and other obstructions protruding shall be properly treated to ensurethatleakage/seepagedoes nottake place.

Additionalpoints tobenotedare:

A] Requiredslopesarecreatedandmaintainedforeasydraining ofwater.
B] Drainingpointsshallbetreatedthoroughlyandcarriedoutrightintotherainwaterpipes.
C] Edgesandcornersarerounded orchamferedtoaminimum of75mmradius.
D] Thetopedgeshallbefinishedinaneathorizontallineandtuckedinagrooveinthewall/parapet,about300mmabovethefinishedsurface.

The treatment shall also be carried out over parapet walls about minimum 300 mm inheightorsill all around ascasemaybe.

The surface shall be finished neatly with cement mortar in a ratio of1:4 and markedwithfalsemarking.Itmaybecoveredwithpavingprecastcementtilesorotherspecified tiles or stones in specified sizes. These shall be bedded in 12 mm thickcement sand mortar. Joints shall be pointed with CM in a ratio of 1:3, mixed with 5%waterproofing compound byweight.

Testing:

Treatment shall be tested by pending water about 250 mm high for 72 hours. Surfacesshallbe examinedforleakageseepage,dampness,sweatingetc.

Measurementsshallbeinsquaremetreforfinishedsurfacearea.Ratesshallincludeall items right from cleaning of surface to completion and required guarantee againstdefectssuchasleekage,seepage,dampness,sweatingetc.for aperiodof10years.

SunkenPortions:

Allthesunkenportions andverticalfaces shallbetreatedinthefollowingprocess:

1. Surface shall be cleaned and first coat of cement slurry applied @ 4.4 kg./sq.m.mixedwithwaterproofingcompound'Impermo'ofSnowcemorequivalentconformingtoIS 2645inrecommendedportions.

2. then the 2nd coat of barrier consisting of 20 mm cement plaster 1:3 cement mortarmixedwithwaterproofingcompound'Impermo'ofSnowcemorequivalentconformingtoIS 2645inrecommendedportions.

3. After proper curing for 3 days and proper drying the surface, the 3rd and final courseof bitumen shall be applied hot at 1.7 kg. per sqm of area and PVC sheetof 400micron thick (Overlaps at joints of PVC sheet should be 100 mm wide and pasted toeachotherwith bitumen@1.7kg/sqm)shall beapplied.

Properslopewithoutlet,plasteringetc.asdetailedinthesketchtobeprovidedbythecivilcontractor.

Waterproofingwith FullyBonded HDPEmembrane

FullyBondedHDPEmembranetypewaterproofingis tobecarriedoutinraft

/sinfoundationwork (onlyif foundnecessaryasperdirectionsof engineer-in –charge)..

1.2 mm thick Fully bonded HDPE membrane (Smooth Type) shall provide an intimatebondtotheunderneathofthepouredconcreteusedasbase/raftslabtoresistwatermigration. Membrane shall be supplied with original manufacturer's Material Test Certificate(MTC)&membraneshallbeinstalledinstrictaccordancewithoriginalmanufacturer'sinstructions,Agencyshall preparethemethodstatement.

The fully bonded HDPE sheet membrane shall consist of a multi-layer composite filmwhich consists of highly resilient HDPE film, self-adhesive polymer layer and a trafficableweather resistantlayer.

Fully bonded HDPE sheet membrane shall be chemically resistant in all types of soil orwater and is unaffected by ground settlement beneath slabs. Thefully bonded HDPE sheetwaterproofingmembraneshall havefollowingtypicalproperties:

Peel Adhesion to concrete > 800 N/M (as per ASTM D903)Elongation>400%

Tensilestrength:>27Mpa

Thickness: 1.2mm with HDPE thickness, HDPE – 0.8 mm min

ThicknessPunctureResistance-1000 N

Pre-applied fully bonded HDPE membrane shall be installed with selvedge laps, andend laps executed with supplier instructions. Pre-applied fully bonded HDPE membrane shallbe laid overthe entire area and returned on to thediaphragm/retaining wall &terminated aspermanufacturerinstructionstillthe levelofraftslab.

Purpose of this technical specifications is to establish, monitor and control all activitiestoexecutethewaterproofingofbasementraftandReinforcedconcreteretainingwallsincluding, sampling, inspections & execution without any safety hazard. This procedure isexercised in order to meetthe requirements specified in drawings,projectspecifications anduptothesatisfactionlevel ofJDA& consultant.

Scope of this work covers installing minimum 1.2mm thick with minimum 0.8mm HDPE,pre-applied, fully bonded HDPE Waterproofing membrane on uniform and regular PCC surfaceforbasementbaseslab.and1.5mmthick with minimum 0.35mmHDPElamination.

Controlling Specifications shall be of Original Manufacturer Shop Drawings (PrivateLabel Supplier Shop Drawings not acceptable) and Original Manufacturer Method Statement(PvtLabelSupplier MethodStatementnotacceptable) afterdueapprovalofJDA.

WaterproofingwithStyreneButadeneStyrene-HDPEmembrane

WaterproofingofallretainingwallsshallbedonewithStyreneButadeneStyrene-HDPE membrane.

Supply& Installation

The Self-Adhesive SBS-HDPE membrane shall be 1.5mm thick self-adhesive, cold applied,flexiblewaterproofingmembranecomprisingofaself-adhesiverubberizedasphaltwithminimum 0.2mm HDPE lamination. Membrane shallbe supplied with original manufacturer'sMaterialTestCertificate (MTC)&membraneshallbeinstalledinstrictaccordancewithoriginalmanufacturer's instructions (private label supplier is not allowed) and agency shall producemethod statement from original product manufacturer. The self-adhesive membrane shall havefollowingminimumproperties:

a) LapAdhesion:>650 N/M

Thickness: 1.5mm, HDPEmin.Thickness-0.20mm

b) HDPElamination: 0.2mmminimum

c) Elongation(toultimatefailureof rubberisedasphalt):>210%

d) Puncture Resistance: 250NLayingofmembrane

The protective release paper shall be peeled back and the adhesive surfaceof the self-adhesive membrane unrolled onto the prepared surface as described. The membrane shall bebrushed onto the surface to ensure that air is excluded from under the membrane. Adjacentrolls ofself-adhesive

membrane shall be provided with minimum 75mm overlap at the edges and 50mm at ends toensure complete continuity. Pressure shall be applied at the lapswith a roller to ensurecomplete adhesion between both layers. All joints to be well rolled until complete waterproofingis obtained. Where membrane is expected to be left exposed at the top of a wall for any lengthof time the top edge is to be batten fixed to secure the edge and prevent slumping. Theperimeter of membrane placed in any given day's operation shallhave the free edges sealedby rolling down tightly to prevent entry of moisture and cleaned before continuing with thefollowingdayapplication.

Topof retainingwall

Where the self-adhesivemembraneisterminated at the top ofawall,achaseshall beprovided of dimensions 20 x 20mm. The self-adhesive membrane shall be dressed into thechaseand pointed priorto backfilling.

Inspectionandprotection

Immediately prior to covering the membrane careful inspection shall be made for accidentaldamage, any damaged areas shall be cleaned and patched with membrane extending 100 mmbeyond the damaged area. On vertical applications where abrasive backfill is to be used themembraneshall beprotected with other approved protection boards.

Controlling Specifications shall be of Original Manufacturer Shop Drawings (PrivateLabel Supplier Shop Drawings not acceptable) and Original Manufacturer Method Statement(PvtLabelSupplier MethodStatementnotacceptable) afterdueapprovalofJDA.

SolventBasedPUWaterproofing

Water proofing treatment to Basement Deck Slab (Terrace of basement) shall be donewithSolventBased PU.

Surface area shall be cleaned up to visible of hair cracks / aggregate texture. Cleaningof RCC member shall be done by hacking tool, wire brush & air blower etc. Open cracks &construction joints shall be sealed with cement mortar. All clean & treated area shall be testedfor water tightness by flooding water.All wet spots & water leakage area shall mark fortreatment.

Providing and applying high performance, low odour, fast curing, high solids, coldapplied polyurethane elastomer waterproof membrane over uniform surface of slab to achievethe required minimum DFT of 1.2mm. PU shall be solvent based pure polyurethane elastomer& shall not contain bitumen or tar and will not bleed or stain. Solvent based PU shall havefollowingminimumproperties:

a) Solid%Vol:88

b) TensileStrength>2Mpa

c) Elongation> 440%

d) ChemicalResistance- Excellent shallbeappliedaspermanufacturer specification.

Providing&layingrolledmatrix soilfiltercum drainagesystemofminimum8mmthickness having a compressive strength of 180 KN/sqm of 8mm height with geotextile on top,aspermanufacturersspecification,completeasdirected.

Component Polyurethane shall be installed as per originalmanufacturer's instructions(private label supplier is not acceptable). Membrane system is designed to be

mindful of theenvironment,havingverylowVOC.

PU waterproofing membrane is well suited for use in most areas of application inindustrial, commercial and civil design. It has been formulated using the latest moisture curingpolyurethane technology and offers the particular benefits of, low tensilemodulus, high tearandadhesive strengths, plus highelongationandpunctureresistance.

PUwaterproofingmembraneshallnotbeexposedtodirectsunlightforextendedperiods of time – to protect the membrane from UV exposure within 2 to 3 days. In addition, themembrane shall be covered by tiles, toppings or membrane protection to prevent damage byothertrades.

Controlling Specifications shall be of Original Manufacturer Shop Drawings (PrivateLabel Supplier Shop Drawings not acceptable) and Original Manufacturer Method Statement(Pvt Label Supplier Method Statement not acceptable) after due approval of Engineer- in-charge.

CrystallineWaterproofing:

Water proofing of all water retaining structures such as Underground Tanks / Sumps,STP sumps, Overhead Tanks etc. shall be done by using crystalline chemical by mixing it inconcrete.

Waterproofingofallwaterbodies/ Water fallsetc.shallalsobedonebyusingcrystallinewaterproofing chemicalbymixingitinconcrete.

Crystallinechemicalshallbemixedinmanufacturersdosageatthetimeofproductionofconcretein plant.

Controlling Specifications shall be of Original Manufacturer Shop Drawings (Private LabelSupplier Shop Drawings not acceptable) and Original Manufacturer Method Statement (PvtLabelSupplier Method Statementnotacceptable)afterdueapprovalofJDA.

GUARANTEE

Thecontractorshallpropose thesystem,givingfulldescriptionsforapprovalfromJDA.

The system shall be guaranteed for 10 years against all defects and liabilities thereof from thedate of completion of project. The guarantee shall be on Stamp paper of Rs. 100/- in proformato be approved by the Employer / JDA. [the contractor shall submit proforma to JDA forapproval of Employer / JDA before being written on stamp paper}. The cost of stamp papershallbe tothecontactor‘saccount.

Work shall be carried through approved specialist agency as per method of working approvedinwritingbytheJDA.

11. FALSECEILING

Thefalseceilingshallbeprovidedasperscheduleoffinishesandscaleofamenities.

12. FloorTiles/WallTiles/Engineeredmarble,Quartz,Graniteetc.

The Engineered marble, Quartz, Granite in flooring is to be provided shall be as perrelevant IS code/ JDA BSR specifications and scale ofamenities given in thisdocument.

13. MSFireCheckdoorof120Minutesfirerating.

Thisspecificationcoversthedesign,supplyofmaterialsmanufacturedandinstallationoffactorymadesingle/doubleleafmetalfiredoorsandframesofapproved make,design, finish tested and ISO9001-2000 Certified Company andthe manufacturer must be approved manufacturer of

supply and fixing of CE/ULcertified metal steel fire doors at all levels with all accessories and including supplyand installation of hardware. The fire check door shall be complete in all respect asper specificationsanddirectionofEngineer-In-Charge.

Door frame shall be Single rebate Grooved profile of size 125 x 60 mm made out of1.60mm (16gauge) minimum thickgalvanized steel sheet confirming to IS 2260 &4351 with grooved seal. Frames shall be Mitered and field assembled with self-tabs.Allprovisionshallbemortised,drilledandtappedforreceivingappropriatehardware.Rubber door silencersshall be providedon the strikingjamb.Framesshall be provided with back plate bracket and anchor fasteners for installation on afinished plastered masonry wall opening. Once frame installed shall be grouted withcement& sandslurrynecessaryforfire doorsonthe clearmasonryopening.

Door leaf shall be 46mm thick fully flush double skin door with or without vision lite.Door leaf shall be manufactured from 1.2mm (18guage) minimum thick galvanizedsteel sheet. The internal construction ofthe door shall be rigid reinforcement padsforreceivingappropriatehardware.Theinfillmaterialshallberesinbondedhoneycomb core with fire rated proprietary insulation filler bonded to both faces ofsheet with lock seam joints at style edges. All doors shall be factory prepped forreceivingappropriatehardwareandprovidedwithnecessaryreinforcementforhinges,locks,and door closers. The edges shall beinterlocked with a bendingradius of 1.4mm. For pair of doors astragals has to be provided on the meeting stilefor both active and inactive leaf. Vision lite wherever applicable shall be provided aspermanufacturersrecommendation witha beading andscrewsfrominside.

The door frames and door shutters shall be primed with 'H' primer and finished withPU/Powder coated. The shutter would be mounted with SS Ball Bearing Hinges ofsize 100mm x 75mm x 3.0mm of Becker Fire Solutions (4 Nos per leaf), appropriateopenings forvisionpanelglass.Prototype Testcertificate foratestcarriedoutearlieratCBRIRoorkeeforfireratingofdoors,shallbeattachedalongwithmanufacturerstestcertificate.

All door shall be factory made and rate to include installation, Fire rated hardwarelike hinges, panic bar, door closer, Vision Panel 300x 200, Glass, lock, handles,coordinator etc. as desired with necessary reinforcement and direction of Engineerincharge.

Door closer confirming to CE & EN 1154 and B.S. – 476, Part-22, two hours‘ firedoor.

Panic Exit Device – Single / Double leaf confirming to CE & EN 1154 and B.S.–476, Part-22,two hours‘firerated.

Mortice Lockwith leverhandle confirmingto CE & EN 122090 /DIN 18251 andB.S.-476,Part-22,two hours‘fire rated.

Stainless steel ball bearing hinges 4 nos. on each side of shutters size 100 mm x100mmx3mmwithscrewsetc.complete.

Vision panel: 6 mm thick borosilicate toughened glass 120 min fire rated glass oneachleafofsize 300 x200mm.

All doors shall be factory made and deemed to include installation, all hardware likehinges,panicbar,doorcloser,VisionPanel300x200,Glass,lock,handles,coordinatoretc.asrequiredwithnecessaryreinforcementanddirectionofJDA.

Applicablecodesandstandardsshallbeallthelatesteditionsofstandards,specifications, acts, and codes of practice referred to herein including all applicableofficial amendments and revisions. However, the applicable standards and codesshall be as per but not limited tothe list given below: IS: 277 Galvanized steelsheets (plain and corrugated) of GPL Grade with Z 120 Coating. IS: 3614 Metallicandnon-metallicfirecheck doors–ResistancetestandPart-2performancecriteria.

The following information shall be submitted by the agency for obtaining approval oftheJDA beforestartofwork

Product Data : Manufacturer's data sheets on each productto beused, includingpreparation instructions and recommendations. Storage and handling requirementsandrecommendations.
Detailsofconstructionandfabrication.Installationmethods.

Shop Drawings : Detailed plansandelevations,detailsoframing members,anchoringmethods,clearances,hardware,and accessoriesclearlyshown.

Manufacturer'sCertificates:Certifyingthatproductsmeetorexceedspecifiedrequirements.

OperationandMaintenanceData:Submitlubricationrequirementsandfrequency,andperiodicadjustmentsrequired.

Nameofinstaller: Approved by the manufacturer, specializingin performing work ofthis sectionwithminimumthreeyears'experience.

Delivery, Storage and Handling Fire rated door set shall be delivered and stored inmanufacturer's unopened packaging until ready for installation. It shall be protectedfrom exposure to moisture and shall be stored in a dry, warm, ventilated weathertightlocation

The Agency shall furnish all materials, labour, operations, equipment, tools & plant,scaffolding and incidentals necessary and required for the completion of all metalwork in connection with steel doors, as called for in the drawings, specificationswhichcoverthemajorrequirementsonly.Anythingcalledforinthetenderdocuments shall be considered as applicable to the items of work concerned. Thesupply and installation of additional fastenings, accessory features and other itemsnot specifically mentioned, but which are necessary to make a complete functioninginstallationshallformapart ofthiscontract.

The Agency shall submit the details of manufacturers from the list of approvedmakes from which he intends to procure the doors. The agency shall procure thedoors onlyaftertheapprovalof themanufacturerfromtheJDA.

Allmetalworkshallbefreefromdefects,impairingstrength,durabilityandappearanceandshall beofthe best qualityforpurposesspecified madewithstructuralproprietiestowithstandsafetystrains,stressestowhichtheyshallnormally be subjected to. All fittings shall be of high quality and as specified and asper approval. The Agency shall strictly follow, at all stages of work, the stipulationscontained in the Indian Standard Safety Code or its Equivalent British Standard andthe provisions of the safety code and the provision of the safety rules as specified inthe General Conditionsofthe Contract forensuringsafetyofmen and materials.Any approval, instructions, permission, checking, review, etc. by JDA, shall notrelievetheAgencyofhisresponsibilityandobligationregardingadequacy,correctness,completeness,safety,strength,quality,workmanship.

Testing: The fire doors shall be tested by CBRI or any Test Lab approved by thecompetentauthority. Galvanized steeltobe usedconforming toIS:277.

Mock-up: Before proceeding for mass production of all units, the agency shall fixtypicalmock-upunitsofeachtypetoverifyselectionsmadeundersamplesubmittalsandtodemonstrateaesthetic effectsandsetqualitystandardsformaterials and execution. The agency shall proceed for mass production only afterapprovalofMock-ups byJDAorhis authorized representative.

The specification and method statement shall be submitted by the agency well inadvance before the start of execution. The execution shall be allowed only after dueapprovalofJDA.

14. WoodenchowkhatsandShutter

The wooden chowkhats, shutters, magic eye in front door etc. are to be providedshall be as per relevant IS code/ JDA BSR specifications and scale of amenitiesgiveninthisdocument.

15. HardwareforDoor &Windows

The stainless-steel fittingsand fixturesshall be in SS Grade 316,machine madeandfreeoff

abrication marks, residualeffectsofwelding/rivetingetc.

ThefittingshallbefinishedinaSatinfish(brushedfinish-satin‘scommercialpurpose)exceptwhereverspecifiedotherwise.Thebrusheffectshallbeuniformandwithoutanyvariations.

Irrespective of the stipulations contained above, the agency shall produce samplesfor all the fitting in advance and a written approval for the chosen sample shall beobtained from the JDA. The decision of the JDA in respect of the specification,quality and makeoffittingto beused atsite shallbe finalandbindingon theagency.Nothing extrashall bepayable on thisaccount.

All the fittings shall provide with all such accessories as are required to complete theiteminworkingconditionwhetherspecificallymentionedornotintheBillofQuantities,specification&elsewhereinthistenderdocument.Thequotedratesshallbedeemedtobeallinclusiveforacompleteitemfitforuseincludingall

material. Labour, T & P, Specials, fixing arrangements,nuts, bolts, screws, bushes,all required connection pieces etc. as well as making good the surface whereverrequired.

All the accessories including brackets, nuts, bolts, screws, bushes etc. shallbe ofthequalityandmakespecifiedbythemanufacture ofthefitting.

All the fitting shall be got fixed through the authorized -Fixing Agency‖on the approvedlistofmanufacturersoffitting.ThesaidFixingAgencyshallbegotapprovedbeforestartoffixing atsite.

All the fitting including accessories shall be accompanied with certificate oforiginandrepresentativetestcertificateofconformancewithrelevantcodeformthemanufacturer with each lot supply. The test certificate shall clearly indicate the lotnumbersofthesuppliedfittings.

The specification and method statement shall be submitted by the agency well inadvance before the start of execution. The execution shall be allowed only after dueapprovalofJDA.

SSRailing

AllSSrailings shallbeofgrade304whichshallbeprovidedasper scopeofwork /relevantdrawings,scaleofamenitiesmentionedelsewhereinthistenderdocument.

Sanitaryfittings

The sanitary fittings such as W.C., wash basin, tap etc. are to be provided shall beasperrelevantIScode/JDABSRspecificationsaccordingtoscaleofamenitiesanddrawingsattached.

UPVCwindows(Doubleglazed)

COMPOSITION **:**Un-plasticized PVC (Polyvinyl Chloride) meeting the requirement ofASTM D 1748 / BS 7413/ EN 12608 shall be used. No reworked material is to be usedinanyprofile;whetherusedinternallyorexternally.

PROFILEMARKING:Themainframeprofileshallbepermanentlymarkedatapproximately 1 meter intervals with an identifying mark which enables the name of theprofile Systems supplier, date of manufacture and extruder to be identified withoutextractionofthe window.

DURABILITY **:**The Systems shall be resistant to chemicals, and be fungal and verminproof.Theprofilesmustbecolorfast,beingabletowithstandweatherandlightresistancetest of4000 hours onxenon and weatheringapparatus.

COLOUR :The Systems color should be uniform and consistent as approved by JDA.FIRERESISTANCE:TheUPVCshouldbeclassedasselfextinguishingtopreventsupportorenhancementofaccidentalfires.

QUALITYCONTROL:Theextrusionprocessmustbequalitycontrolledandtheappropriatestandardsrelatingtoimpactstrength,technicalperformanceandconsistency.

PROFILE CONSTRUCTION :The profile depth should be minimum of 58mm with anominal wall thickness, internally and externally of 2.8mm. The profile shall have aminimum of two sealed chambers for transoms and mullions and 3 sealed chambers forframes andsashes.

INTERNALPROFILEDRAINAGE:Theinternaldrainageshallbeisolatedfromchambers into which reinforcements can be placed or through which frame fixing pass.Drainage shall be either through the base or alternatively to the face, concealed by facedrainagecaps.

PRESSURE EQUALIZATION :Pressure equalization for glazing rebates and for framerebates shall be carried out in accordance with the recommendation ofthe profileSystems suppliertoensureefficientdrainageinadverseconditions.

WINDOW PERFORMANCE:Windows must meet the requirements with respect to airpermeability,watertightness and windresistanceupto 2400pa.

STRENGTH AND SAFETY OF MOVING PARTS:The moving parts of the WindowsmusthavesufficientstrengthandrobustnesstowithstandaccidentalStaticandDyna micloadsinuse,withoutany permanentdeflectionorbreakage.Theoverallevaluation will be based on the experience from use and subject to approval by theDesignConsultant/Client.

GLAZING BEADS : Glazing beads shall be of the one foot snap in design and shall beextruded UPVC mitred at the corners. All glazing beads shall be with a co-extrudedgasket of a multi-fin design to maintain security and weather performance. Gasketmaterialshall bethermoPlastic Elastomer.

GLAZING GASKETS:All glazing gaskets as well as weather seals are to be extrudedfrom non migratory EPDM . Glazing gaskets shall be a continuous length. Gasket maybesubjectedtorandomtestingandshallbeobtainedfromtheprofile Systemssupplier.

WEATHER SEALS :Weather seals shall consist of a double sealing Systems. Seals onthe sash and the frame shall be continuous length and foroutward openingwindowsthe seal on the sash shall be joined to a 50mm length of pressure relief seal at thebottom of the opening whereas the seal on the frame shall be joined on the top ofopening.

Weathersealsandpressurereliefseals,whichshallbeobtainedfromtheprofileSystems supplier, shall be capable of removal without disturbing the glazing Systems orremovaloftheframeorsash.

GLAZING:AlldoubleglazingshallbeinternallybeadedThewindowsshallbeconstructed in such a manner that the glazing or deglazing can take place without theremovalofthesashorframe.

WELDEDJOINTS:Allcornerjointsshallbehomogeneouslyfusionheatweldedinaccordance with the instructions of the profile Systems supplier. The resulting jointsshall be finished by the grooving/knifing method. Solvent welded joints shall not beallowed.

REINFORCEMENT :All transoms and mullions shall be fully reinforced, irrespective ofsize, with corrosion resistant galvanized steel. All other profiles to be reinforced as perthe specification of the profile Systems supplier which shall suit the proposed styleapplicationrelativetoexposure,elevationandheightabovethegroundlevel.Reinforcing shall be secured by suitable screws in accordance with the instructions oftheprofile Systemssupplier.

All galvanized steel reinforcing profiles shall comply with BS 2989 1982 Grade G 275N /IS4759-1996 orequivalent.

MECHANICALJOINTS:Themechanicaljointingofmullionsandtransomsshallbecarried out in strict accordance with the instructions/recommendations of the profileSystems supplierusingonlyapproved mechanicalcoupling components.

HARDWARE GENERAL :All hardware shall be manufactured from corrosion resistantmaterialand beapproved bytheprofile Systemssupplier.

All ferrous screws, nuts, bolts and other fastening or fixing shall be of stainless grade orof a suitable coated steel recommended for use in the fabrication of UPVC windows.Metal that are in contact with each other shall be compatible so as to prevent galvaniccorrosion of dissimilar metals by electrolytic action. All hardware should ideally be fixedbyattachmentsthroughtheUPVCtothereinforcement;alternativelyitshouldbefixedinpurpose designedscrewports oratleasttwo thicknessofUPVC.

Hardwarewithprovisionforadjustmentshallbeaccessibleforadjustingafterthewindow has been installed. Hardware used to open and close the window shall bereplaceablewithout removingtheouterframefromthestructure.

FRICTION HINGES:Top hung and side hung opening out lights shall have two frictionstays perlightandbe ofstainlesssteel construction.

The size of the friction stay will depend on size, weight, hanging and exposure of therelevant sashes. This will be determined from table provided by the hinge manufacturer.All side hung friction stays are to be incorporate a riser block to allow the sash to besupportedin itsclosed position.

BUTT HINGES :Where external butt hinges are used they must be of the security pintypewhich do notallowremovalofthehinge pinfromoutside.

ESPAGNOLETTEHANDLES:Allespagnolettestrikingplatesaretobepurposedesigned and secured to the outer frame by approved screw fixing. The espagnolettemechanism shall be of multi locking points dependants on size. All ironmongery wherepossible shall be screwed into frame reinforcing, or fixing screws must penetrate aminimumoftwowallthicknessoranequivalentscrewport,toobtainsufficientpurchase.

FIXING THE FRAME TO THE BUILDING:The gap between the structural opening andthe uPVC frame shall be between 5 to 10mm all round, which should be filled byinjectable PU foam after completion of fixing for best frame and wall bonding, and forsound and thermal insulation and finally applying neutral cure low modules Siliconesealanttomakejointwaterproof.

Fixingpointsshall be to all four sides ofa frame,spaced 150mm to 250mm fromcorners and not more than 600mm apart elsewhere. Fixing shall be by direct drilling10mm hole through U PVC frame to building wall. Each fixing shall penetrate intobuilding structure by no less than 40mm.and ultimate fixing with anti corrosive platedanchor bolts through these holes. All heads of all fixing screws shall be covered withappropriateplasticcovercaps.

HANDING AND TRANSPORT :Windows may be transported either glazed or unglazed.All windows or prefabricated units shall be transported and stacked in a vertical positionand properly anchored to prevent movement in transit, windows shall be separated fromeachotherbyadequatepacking pieceduring transport.

WARRANTEE:The window manufacturer shall issue a certificate of warrantee againstany manufacturing or installation defect, valid for minimum of five year for rectification ofthedefect.

S.NO.	TECHNICALSPECIFICATION	VALUE
1	Impactstrengthdownto400C	Nobreakage
2	Notchimpactstrength	>30kJ/m2
3	Ballimpacthardness	100N/mm2
4	Tensilestrength	>40 N/mm2
5	Emodule	>2500N/mm2
6	LinearThermalExpansion	Coefficient300Cto+500C 0.80x 10-4 K-1
7	ThermalConductivity	0.16W/mK
8	Specificvolumeresistance	1016Ωcm
9	RelativePermittivity	3.3at50GHz2.9at106Hz
10	Firebehaviour	Selfextinguishing
11	WeatheringstabilityRALGZ716/1	After8.0GJ/m2irradiationenergybettertha n authenticitygrade 4ofgreyscale
12	SpecialResistance	Resistancetotermites,decay,chemicals e.g. alkalines, acids, salts, salty solutions,seawater, petrol, oil, lime, cement, anykindofemissionsPhysiologicalBehavio urand

LISTOFMAKES(PreferredMakes/Brands/Manufacturer)

STRUCTURAL ANDCIVIL/PLUMBINGANDSANITARY

S.No.	Material	Preferred Makes/ Brands/Manufacturer
1.	Cement (OPC 43 or 53)	WONDER/ULTRATECH/AMBUJA
2.	WhiteCement	BIRLA CEMENT/ J. K WHITE /TRAVANCORE
3.	ReinforcementSteel	SAIL/TATASTEELLTD/ JSW/Vizag
4.	ParallelThreadedCouplers	DEXTRA/G-TECH/TATA
5.	Re-barringChemical	HILTI/3MINDIA
6.	StructuralSteel	TATA/ JSW STEEL LTD/ SAIL/ JINDALSTEEL& POWERLTD.
7.	Plasticizer,SuperPlasticizer,Admixtures,Otherconstructionchemicals	M.C. BAUCHEMIE / FOSROC /SIKABASF
8.	AACBlock	AEROCON / BILTECH/ J K Laxmi/MAGICRETE
9.	AACBlock Adhesive	ULTRATECH / FERROUS CRETE /BALENDURA/AEROCON/JKLaxmi
10.	Polymer modified cementitiousgrout	WEBBER/ MAPAI / CAPA /KERAKOLL
11.	List ofRMCproducers	ULTRATECH/ACC/READYMIXIN DIAPVT.LTD
12.	Curing Compound	FOSROC / SIKA / PIDILITE / STP /CICO/BASF
13.	ExpansionJoint- modular	HERCULES/Z-Tech/SANFIELD
14.	Bricks	1st Class
WATERPOOFING		
1.	Waterproofing Self Adhesive(HDPE) Membrane	GRACE / FOSROC / MYKSCHOMBURG
2.	SingleComponentLiquidPUElastomericMembrane(sprayapplied)for DeckWaterproofing	BASF/ SIKA/FOSROC/MYKSCHOMBURG/GRACE

3.	Waterproofing Compound (Crystalline)andSwellableBar	XYPEX / KRYTON / PENETRON /BASF / SIKA / FOSROC / MYKSCHOMBURG/GRACE
4.	PolymericCementitiousCoating	BASF / FOSROC / GRACE / STP /PIDILITE
5.	ElastomericAcrylicUVresistantliquid applied coating	BASF/ FOSROC/SIKA/GRACE
DOOR,WINDOWS&WOODWORK		
1.	Laminated Particle Board /Particle board / Laminates /Plywood/ Water Proof PlyBoard/ Marine	MERINO / GREENLAM / CENTURY /ARCHIDPLY
2.	VeneeredParticleBoard	MERINO/DURO/GREENLAM/KITPLY
3.	SSMesh	GKD/WMW
4.	Flush doorshutters	GREENPLY/ ARCHIDPLY / DURO /MERINO /CENTURY/KITPLY
5.	GlasswoolInsulation	UP TWIGA / POLY GLASS / LLOYDS/OWENSCORNING
6.	RockWoolInsulation	LLOYDS/ROXULROCKWOOL
7.	Polycarbonate Sheet	GELEXAN/ DANPALON/GALLINA
8.	DeckingSteelsheet	TATASTEEL/ LLOYDS/ JSW
9.	Naturalwoodveneer	GREENPLY/ ARCHIDPLY / DURO /MERINO /CENTURY/KITPLY
10.	Anti-static high-pressurelaminate	FORMICA/BAKELITEHYLAM/DECOLAMMERINO/KITMICA
11.	FireSealant	HILTI/3MINDIA/FISCHER
12.	ExtrudedPolystyreneBoard	STP / SUPREME / OWNESCORNING,SHALIMAR
13.	Wooden/Metal/Glaze-fireratedDoor Shutters&Acoustic	NAVAIR/ KUTTY/GODREJ/ SUKRI/SHAKTIMET
14.	UPVC Doors&Windows	NCL / REHAU / FENESTA / LG-HAUSYS/SALAMANDER
15.	Fireratedglass(2hoursfirerating)	GLAVERBEL/SAINTGOBAIN/PILKINGTON/PYROGUARD/ SCHOTT
16.	Hardwood	TeakWood/CPTEAK/BTCWOOD
FINISHING		
1.	MelaminePolish/PUPolish	ASIANPAINTS/PIDILITEINDUSTRIES/DULUX/BERGER/ICI
2.	Polyester Powder CoatingShades	NEROLAC/BERGER/AKZONOBEL

3.	WallPutty	BIRLA WHITE / JK WHITE / BERGER /SAINTGOBAIN
4.	Oil BoundWashable Distemper	ASIANPAINTS/BERGER/NEROLAC /ICI/ AKZONOBELDULUX
5.	AcrylicDistemper	BERGER/ ASIAN/DULUX/NEROLAC
6.	CementPrimer	BPWHITE(BERGER)/DECOPRIMEW T (ASIAN) / NEROLAC /AKZONOBEL(DULUX)
7.	Steel /WoodPrimer	AKZONOBEL (DULUX) / NEROLAC /BERGER / ASIAN PAINT / JENSON &NICHOLSON
8.	Adhesives	ANCHOR / DUNLOP / PIDILITE-FEVICOL/
9.	Premium Acrylic Emulsionpaints	DULUX AKZONOBEL / NEROLAC /ASIANPAINTS/BERGER
10.	TexturedExterior Finish	ASIAN (ULTIMA) / BERGER(WEATHER COAT ALL GUARD) /DULUXAKZONOBEL(ULTRACLEAN) / NEROLAC(EXCELTOTAL)
11.	SyntheticEnamelPaint	ASIAN / BERGER / NEROLAC /AKZONOBEL(DULUX)
12.	EpoxyPaint	AKZONOBEL (DULUX) / NEROLAC /ASIANPAINTS/FOSROC/BERGER
13.	FirePaint	ASIAN PAINT / BERGER PAINTS /SHALIMAR/ JOTUN/AKZONOBEL
14.	POP/GypsumPlaster	FERROUSCRETE/ ULTRATECH /INDIA GYPSUM / ELITE (90) OFGYPROC
15.	Cement based Ready MixPlaster	FERROUSCRETE / ULTRATECH /SAINTGOBAIN
16.	Pre-CastGRCJali	UNISTONE/KERAKROMEGRC
17.	Polysulphidesealant	FOSROC / SIKA / TUFFSEAL /PIDILITE / WACKER/ DOW CORNING /GE/STP
18.	Silicone/WeatherSealant	WACKER/ DOWCORNING/GE
STEEL&ALUMINIUMWORKS		
1.	StainlessSteel	SALEM STEEL / JINDAL ALLOYS /SAIL/ USHA MARTIN
2.	WeldingElectrodes	ADVANI-OERLIKON/MODI
3.	Dash/Anchoring Fasteners	HILTI/FISHER/BOSCH/AXEL

4.	Anodised Aluminium Hardware(HeavyDuty)	HARDIMA / ALUALPHA / PULSE OFLGFSYSMAC/ HINDALCO/ EVERITE
5.	AluminiumStructuralMembers – Windows, Glazing andPartitions	JINDAL / HINDALCO / NALCO /INDALCO
6.	StainlessSteelRailing,Accessoriesetc(GradeSS316)	OZONE/GEZE/KICH/DORMA /JINDALSTAINLESSSTEEL
7.	G.ISteeldoorframe	SYNERGY THRISLINGTON /SHAKTIMET/NAVAIR
CEILINGS		
1.	Falseceiling Gridsystem	AMSTRONG/SUPER BONDGYPROC /GRIDLINE/RK/GRIDSYSTEM
2.	FalseCeiling–Gypsum	SAINT GOBAIN GYPROC / AMF /BORAL/LAFARGE/INDIAGYPSUM/HUNTERDOUGLAS
3.	MetallicFalseCeiling	ARMSTRONG / DURLUM / HUNTERDOUGLAS/SAINTGOBAIN
4.	AcousticalTileFalseceiling	ARMSTRONG / SAINT GOBAIN/ECOPHON/DEXUNE/ANUTONE
5.	Calciumsilicateceilingtiles/Board	GYPROC / AEROLITE / BORAL /HILUX / ARMSTRONG(MYLAR) /EVEREST/NCL
6.	AluminiumCompositePanel	ALUCOBOND/ALPOLIC/ALUDECOR /REYNOBOND
7.	AcrylicSolidSurfaces	HANEX/L.G-HIMAC/ DUPONT
FLOORINGS/WALLTILES		
1.	GlassMosaicTiles	BISAZZA,MRIDUL,OPIO,PALLADIO,ITALIAGLASS
2.	Floor&WallTiles:Ceramic/Vitrifiedtiles/Antiskid/Matt/Glazed	KAJARIA/H&RJOHNSON/SOMANY/VARMORA
3.	PVC/SPCFlooring	ARMSTRONG / TARKETT / LGHAUSYS/WELSPUN
4.	Laminatedflooring	ACTION TESA / PERGO / CENTURY/DURO/GREENLAM
5.	Engineered stone - Marble /Quartz	ASIAN / JOHNSON / KALINGA /QUTONE
6.	Chequered Tiles, Paver Block &KerbStone(ofNon-RecycledC&DWaste)	MAYUR/ULTRA/NITCO/UNISTONE
7.	Tile/StoneAdhesive/TileGrout	MAPAI /CAPA/KERAKOLL/MYK

8.	Floorhardener	PIDITOP 333 BY PIDILITE / FOSROC /SIKA / IRONITE / FERROK /HARDONITE
9.	EpoxyFlooring	FOSROC/SIKA/CICO/BASF/MYK
10.	HeatResistantTiles	THERMATEK/NATIONAL/THERMAX
11.	FloorTrap	JAYNA/ CHILLI/ NIRALI
GLAZINGS		
1.	Glazing Structural / Suspended /Skylight/clear/float/frosted/mirror	SAINT GOBAIN / ASAHI /GLAVERBELL
2.	Clear/Float/FrostedGlass/Mirror	AIS / GLAVERBELL / MODIGUARD /PILKINGTON/SAINTGOBAIN/ATUL
3.	GlassSpiderFittings	DORMA / HAFELE / OZONE /HETTICH
4.	ToughenedGlass/Hermeticallysealedperformanceglass	SAINT GOBAIN / GUARDIAN GLASS /PILKINGTON/MODIGUARD/AIS
HARDWARE		
1.	Nuts/Bolts&Screws	GKW/HILTI/HETTICH
2.	Clamp system for dry stonecladding	HILTI/ FISCHER/BOSCH/AXEL
3.	Hinges&Brassware	EARL BIHARI / KICH / INDO-BRASS /ASSA-ABLOY/ HAFELE/GEZE/DORMA
4.	MDFBoard	NUWOOD/DURATUFF
5.	VitreousChinawarecisternetc.	JAQUAR /TOTO
6.	All type of hardware and fittingforalltypeofglazing/doors/windowsetc.includingmortiselatch& lock,towerbolt,ballbearing butt hinges, friction stayhinges, sliding door bolts, leverhandle,magiceyedoorcloser etc.	HAFELE/HETTICH/YALE/GODREJ (HeavyDuty)
7.	ToiletCubicles	MERINO /GREENLAM/ DORMA
8.	Hardware for Fire Check Door/panicbar/panictrim/doorcloser/hinges/locks	HAFELE/HETTICH/YALE/GODREJ (HeavyDuty)
9.	EPDMGasket	HANU/ ANAND/OSAKA
Plumbing& Sanitary		
1.	GIPipes	JINDAL (HISAR) / TATA / SURYAPRAKASH

2.	GIFittings	UNIK/ZOLOTO/ SURYA
3.	SSPipes&fittings	JINDAL / VIEGA / J-PRESS/KANTHERM
4.	Aluminum-reinforcedPE-HDpipe	Hitec/Viega/Jindal/ Kantherm/Kitec
4.	HDPEPipes	RELIANCE / JAIN IRRIGATION /KISAN/ORIPLAST/SUPREME
5.	DI Pipes	ELECTROSTEEL(VEDANTA)/JINDAL /TATADUCTURA
6.	DI Fittings	ELECTROSTEEL (VEDANTA) /KALINGA/TATADUCTURA
7.	CI Doubleflangedsluicevalve	KIRLOSKAR/SONDHI/KEJRIWAL
8.	FloatValve	LEADER/ZOLOTO/KSB
9.	Centrifugally Cast (Spun) IronPipes & Fittings(hubless)	JAYSWAL NECO / RIF / SKF/ SAINTGOBAIN/TATA
10.	Centrifugally Cast (Spun) Iron(ClassLA)Pipes (hubless)	JAYSWAL NECO / ELECTRO STEEL /TATA/SAINTGOBAIN
11.	CIManholecovers,Frames&GIG ratings	JAYASAWALNECO/RIF/ SKF
12.	SFRC Manhole Covers &Gratings	KK/OCR/PARGATI/T-CON
13.	Stoneware Pipes and GullyTraps	PERFECT / PARRY / BURN / ANAND /RK/HIND
14.	RCCManholecovers&Frames	KKMANHOLE/GRATINGCO.(P)LTD
15.	GunMetalValves,Globes	ZOLOTO/CASTLE/KARTAR
16.	Sanitary CP Fittings &Accessories	-ARTIZE‖ SERIES ofJAQUAR or equivalentseriesof: HANSGROHE/GROHE/KOHLER
17.	CONCEALED FLUSHING CISTERN	VIEGA/GEBERIT/GROHE/ JAQUAR
18.	WaterMeter	PRIMA/ ZOLOTO/LEADER/CAPSTAN
19.	BrassStop&BibCock	ZOLOTO/SANT/L&K/LEADER/ASTRAL
20.	UPVC/CPVCPipe&Fittings/SILENTFITTINGS	ASHIRWAD/ASTRAL/SUPREME/FINOLEX
21.	Non-ReturnValve(Checkvalve)andotherkindofValves	ZOLOTO/SANT /LEADER
22.	BrassFerrules	DHAWANSANITARYUDYOG/KALSI/ANNAPURNA

23.	Insulationforhotwaterpipes	KAIFLEX / ARMAFLEX / CAREFLEX /LLOYD
24.	Insulationforexternal/exposedhotwaterpipes	KAIFLEX/ARMAFLEX / CAREFLEX
25.	Pipe protection for externalwatersupplypipes	PYPKOTE / ARMAFLEX /MAKPOLYKOTE
26.	StainlessSteelSink	NEELKANTH/ NIRALI/CERA/JAYNA
27.	RCCPipes	LAKSHMI / SOOD & SOOD / JAIN &CO./PRAGATICONCRETE
28.	Dash/ Stud/AnchorFasteners	HILTI/ CANON/BOSCH/ FISCHER
MISCELLANEOUS		
1.	IrrigationEquipment	JAIN IRRIGATION, KISAN, FINOLEX,PLASSON
2.	PVCwater tank	SINTEX/ POLYCON
3.	Fabric/Blinds/Curtain	Warwick,DDécor,RRDécor,ManuelRevertorequivalent
4.	Carpet	Welspun/JaipurRug
HVAC		
1.	ReferigerantPiping	Toataline/PapdiwalorEquilient
2.	CommunicationCables	Polycab/Finolex/ Anchor
3.	AirConditioners (Window/Split/Ductable Unit)VRV	Mistubishi/Daikin/Ogenral/Hitatchi/Samsung
4.	DrainPipewithnitrile	Astral/KWing/Prince
5.	Insulation(NitrileRubber)	KFlex/Armaflex/Superlon

1. Equivalentmakes tothemakesmentionedabovemaybeusedwithapprovalfromJDA.

SEC VII

Scope & Specifications ofElectrical&MechanicalWorks

1.0 General Scope and Specifications of Electrical and Mechanical Works

Scope ofwork

Scopeofworkcoversplanning,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.

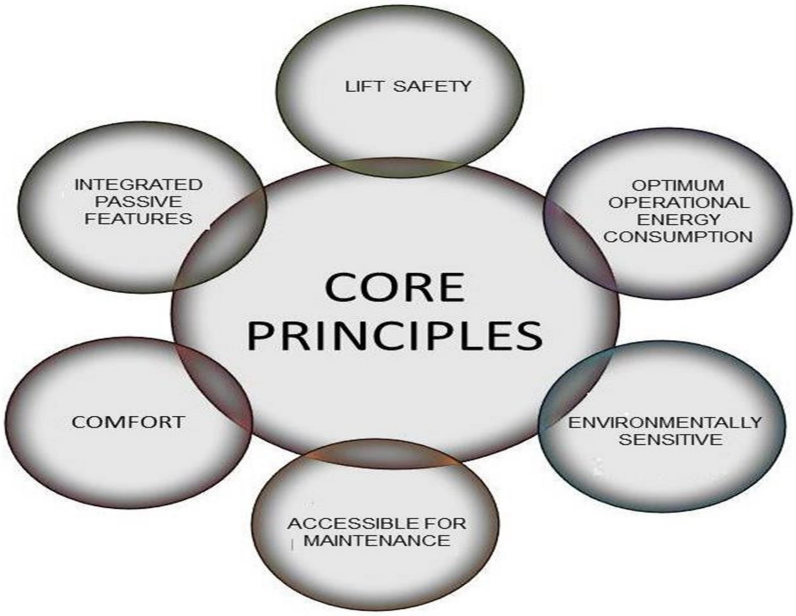
The scope of works also covers the preparation of layout plans, drawingsfor E&M schemes before the commencement of work. During execution, ifthe local bodies etc. require a modification, the same shall be executedwithoutanyextracost.Finally,afterexecution,approvals/NOCs/clearances from local bodies etc. shall be the responsibility of successfulbidder for which nothing extra is payable in case any modification / extra work is required. All statutory fees / charges required for obtaining clearancesfromCEA/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. Waterrequiredfortestingofequipment's isalsoinscopeof agency.

ELECTRICAL WORKS

The EPC Contractor shall carry out Design, Engineering, Supply, Installation, Testing & Commissioning of complete Internal & External Electrification works including Low Voltage (LV) (Dedicated double circuit 11 KV Charging feeder from nearby 33 KV Substation of JVVNL, RMU, HT Panel, Transformer, earthing and lighting arrestor) and other works as required for smooth functioning of the proposed construction of Satellite Hospital, at Achrol , Jaipur. All Electrical & LV works shall be designed and executed as per latest codes of practice for Electrical installations and meeting the requirements of Indian Electricity Rules/ Act, applicable I.S. Codes/ Rules and Latest relevant standards/codes published by B.I.S(formerly I.S.I), Special requirements of JVVNL, CPCB norms, GRIHA-V amended up to date.

ELECTRICALWORK :



1. Internal electrification.
2. External electrification including transformer, RMU,HT panels ,cables Etc.
3. Laying of dedicated double circuit charging feeder from nearby 33/11 KV substation.
4. DG set and UPS of appropriate capacity.
5. Fire fighting, fire protection and fire alarm system.
6. CCTV & EPBAX System.
7. Force ventilation for parking.
8. Facade and campus lighting
9. Solar PV power generation,
10. MGPS&Oxygen plant,

11. Nurse call bell system ,
12. Lighting arrestor &Aviation light,
13. Boom Barrier and ticketing system for parking.
14. Fan ,Lighting Fixture and fittings.
15. Passenger and service Lift.
16. HVAC

The Electrical design objective is to achieve a sustainable building that are energy andresource efficient and promote a healthier environment for building occupants & also toachieveGRIHA-5Rating IndiaCertification

2.0General

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:

ScopeofworkSpecificationsandConditions,AdditionalConditionsmentionedinthisdocument.

JDASpecifications forcivilandelectricalasapplicable.

Indian Standard Specifications of BIS including modifications /amendments.

RelevantSectionsofNationalBuildingCode2016withup-to-dateamendments.

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&Mservicesshallhavet obesubmittedforevaluation&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. JDA shall, 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,fromany money 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 includingspare parts.

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 JDA in themanneraswill belaiddown byhim,in consultationwiththeagency.

All instruments and facilities necessary for the tests shall be provided by theagency.

8.0 Completenessofwork

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.

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.

INTERNALELECTRICINSTALLATION(IEI)

TheworkwillbecarriedoutinrecessedPVCconduitwiringsysteminaccordanceofGeneralSpecifications forElectricalwithamendmentsuptothedateofopeningofbidsandthegoverningspecifications, whicharemandatory 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/requirement shall also be provided by the agency.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.

Separateverticalshaftisproposedforlayingofsubmainconduitsfromvariousflooruptogroundlevel shallbeprovidedforlayingofElectrical,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 DGSET

DGSetsInstallation

DG sets outdoor Silent type with radiator cooled. DG Set shall be within anacoustichood. Each DGSet shall be providedwithitsownday oiltanksuitableforatleast10hrsoperations.

SilentDGSets(radiatorcooled)alongwithAMFPanelforgivingthreephases, 415V at 50Hz LT supply to meet Power backup requirement shall beprovided. DG setsshallbe ofprimerating.

DG Set shall be provided for total connected Electrical Loads of complete Guest housebuilding including Common Services viz, Lifts, Basement / Parking, DrinkingWaterPumpingSets,STP,ExternalLighting,SentryPosts,MechanicalVentilation.
Smoke Management system. CC-TV, boom barrier, common areaload(L&P)forall floors includingBasement,Staircaseand E&M Rooms.

Scopeof workfor DG Setsandalliedworks

- SITCofDGSetsalongwithAMFpanel,DG exhaust piping
- DGfuel piping
- Cabling&ElectricalPanelEarthing(Body&Neutral)

The capacity of DG sets should be worked out with following consideration:Power Factor– 0.80.

Provisionfor Future expansion/ addition–2%oftheconnectedload

The diversity factor to be, as per the National Electric Code 2011or latest.Loadingfactor 80%

DG Sets shall be 415V, 3 Phase, 4 wire, 50Hz, 0.8 PF with acousticenclosure.

DG SetFlueStack

DG Sets shall be located on periphery of the plot. DG exhaust stack shall beprovidedasperNorms.

DGSetStart/Stop&changeover shallbefullyautomatic.

DG sets shall start automatically within 10-30seconds in the event of a powerfailureandshalltransferpowertoemergency/criticalloadsautomatically.

DG Setsoperationshallincorporate:

(iv) AutoStart/StopofDGSets i.e.automains failure.

(v) AutoTransferofLoad.

DG Set Panel shall be synchronizing cum Load Management Panel.DGPanelandAll GridSupplyPanels

- BreakerShallhaveProtectionforOverload/ShortCircuit andEarthFault
- AllBreakersshallhaveMicroprocessor Release.
- All Breaker Release shall be Communication Capable and Compatible withBMS.
- AllBreaker Releasebesitesettableforoverloadand EarthFault.

EXTERNALSTREETLIGHTING

ThescopeofworksunderExternalStreetLightingSystemrequiresillumination of all external areas like streets, roads, entrance gates, boundarywalls, parks, gardens, landscaping, porches, walkways, pathways, sports areaetc.,whichshall beilluminated conforming to NBC 2016,ECBC 2017andJDA specifications maintaining required Lux levels. Suitable LED fixtures withIP-66 rating shall only be used within built harmonics up pression mechanismfor external area illumination. All LED luminaire shall be LM79, LM80 testedfrom NABL accredited govt lab and Test-Reports shall be made available tothe JDA. Solar, decorative and conventional street light poles, bollards, gatelights, post-top lantern etc. shall be used for this purpose keeping in viewaesthetical and architectural requirements. The external lighting shall be fedfrom outdoor type feeder panels and automatically controlled through 24-hourDigital/AstronomicalTimers.

Incoming cable from sub-station / source of supply to street lighting mainfeederpillarshallsubsequentlyfeedtofeederpillarslocatedatdifferentlocationsforstreetlighting.

Thesefeederpillarsshallbefabricatedasperapproveddrawingandtechnical specification. Moulded case circuit Breaker (MCCB) as incomer andMCBs for outgoing circuits, AC

contactor, Time switch (Programmable) andbus- bars shall be provided in the feeder pillar. Provision shall also be kept forprovidingEnergyMeterinsidethefeederpillar.Electricalsinglelinediagramoffeederpillarshall begotapprovedfromJDA.

TwocoreXLPEaluminumconductorarmouredcableof2Cx16sq.mm(minimum) frompoletopole&4coreof suitable size to energize the feederpillarsshallbe used andlaid throughDWC pipethroughouttheentirework.

Pole height, single or double arm bracket, wattage of the luminaires, lux leveletc. shall be decided as per Street Lighting Standards as per DBR. However,for street lighting in areas other than specified in the table, decision of JDAshallbefinal &binding.

Street Lighting fixtures shall be LED type made of high pressure die- castAluminium housing single piece in construction with IP-66 protection. Theluminairesshallbecompletewithelectroniccontrollers,LEDlampsandaccessories,protective glasscover.

Independentcircuitsshallbeprovidedtoalternatepolessothatonecircuitcanbeswitched offautomaticallyduring nighttimetosave energy.

Street / Road lighting pole shall be octagonal type GI (Hot dip galvanized asper BS EN ISO 1461 Standard 70 Microns) with welded base plate and withinbuilt cable loop in box 500mm length (Box height). Street / Road lightingpoles shall be mounted on precast RCC foundation of minimum 600x 600 x1200 (D) with suitable reinforcement (Foundation bolt EN 8 grade) Octagonalpole shall be designed to with stand the maximum wind speed as per IS 875.The top loading i.e. area & the weight are to be considered to calculatedmaximumdeflection of the pole and same shall meet the requirementofBSES 40-3-3-:2003. Pole shall be HT Steel conforming to grade S 355 & baseplate Fe 410confirming to IS2062,&BracketERWtubeasperIS1161.

The street lighting scheme prepared on the above lines shall be got approvedformJDA(Electrical)beforeexecution.Layoutshallbemadeinsuchamannerthatmeterin gis doneatone/twopointsonly.

ParkLighting

TechnicalSpecifications

All parks irrespective of area will have lighting arrangement with LED lights.Gate Entry passage to the entry of pathway and security lighting (for parkshavinglarge area)shall be properlyilluminated.

Onpathwaysdecorativepoles/bollardsshallbeprovidedtoachievedesiredilluminationlevels.In dependentcircuitsshallbeprovidedtoalternate poles so that one circuit can be put the lights automatically duringnighttimeto saveenergy.

I. Foundation: Foundation for pole shall be having RCC-M-25 gradewithpedestal size400mmx 400mmx 1200mmdeep(Below NGLand above NGL) as per drawing approval from Engineer-in- charge.Thetor steel (gradeFe 415) usedinpedestalshall beasbelow:

II. Pedestal: 12 mm dia, 8 nos. vertical with 10 mm dia rings for @ 200C/c as binders complete with digging, shuttering & back filling etc. asrequired. Foundation bolts shall be of 16mm dia 600 mm long J typeMS bolts (threaded portion shall be galvanized) along with 3 nos. GInuts&2 no.GIwashersetc.

III. Junctionbox: If required, Junction Box shall be made out of

GlassReinforced Polyester Sheet Moulding Compound conforming to IS:13410-1992gradeS1ofoutsidedimensions230mm(H)x170mm (W) x 105 mm (D) (all the corners of the box should be round and notpointed ones) suitable to mount on 65 mm dia GI pole with followingprovisions /accessories mounting in box complete as per drawing No.3 &4.

2Nos clampsmadeoutof19mm x3mmGIstripofsuitablelengthfor Mountingboxonthepole.
Watertightfrontcoverwith2No.stainlesssteelhinges&2Nosscrewsfortightening&GIU.
Clampforclosingofcover along withABSpanellock.

4Way,220,30A,toughmouldedstainlesssteelterminalconnector
16amp.MouldedSMC rewireablekit-kit-1 no.
76mm diaholeatsuitablelocationonrear wallfor cable&wireentry
Earthing boltM6x20mm

a) TheJunctionboxshallwithstandharshweather,externalhazards,andinternal hazards, having anti- corrosive, dust proof, rust proof, shock proof,vermin and water proof, UV stabilizer and pilfer proof features, resistant tohighheatandshould notdeformbyflame.
b) Junction Box will comply with requirements as given in as per drawingsapprovedfromEngineer-in-charge.
c) JunctionBoxshould besuitableforout doorus
d) JunctionBoxshouldnotmeltat hightemperature.
e) Mountingarrangementinsideboxhastobemadeasperrequiredofelectricalitem.
f) All MSpartsshouldbezinc passivated.
g) Hingesshallbemadeout of Anti corrosiveMaterial.
h) JunctionBoxshallcompriseofamouldedbaseandmouldeddoor.
i) Thicknessof SMCDoor /basewillbeminimum2mm.
j) Thedoorinclosedpositionshouldbeoverlappedoncollarofbasesuchastoprotectelectricalitemfromingressofexternalsolid,dustandliquidobject.
k) Allthecornersofthejunctionboxshould beroundand notpointedones.

IV. Polelight:IntegraltypeluminaireshallbeLEDtype&outdoortype(IP-66)with separate electronic driver & suitable to provide required illumination levelwithaestheticsmatchingtheprojectarchitectureandapprovedfromEngineer-in-charge.

V. Gate light: Integral type luminaire shall be LED outdoor type (IP-66 & suitableto provide required illumination level with inbuilt electronic driver with suitablemounting arrangement atentrancegate/plazaetc completeasrequired.

LAND SCAPINGLIGHTING

TheScopeofworkoftheContractor shallbeasunder:-

a) Designingthesystem&obtainingJDAapproval
b) DetailedDesigning/preparationofShopdrawingsanditsapprovalfromJDA;
c) Supply,Fabrication,Construction,InstallationandCommissioning.

Further,details(inbrief)are asunder:-

All external landscaped areas will be adequately lit with approved LED lightingfixturessoastoprovidelightingtoallpedestrianwalkway,vehicularroads,entrances to complex, to Podium, to buildings, to basements etc. & to all fire exits.Thelandscapelightingwillbedonesoastocreateapleasantworldclass environmentintheeveningforasafe&pedestrianfriendlyenvironment.Thelighting will accentuate trees

by up lighting, direct traffic by motorable embeddedlights,highlightrampsbywallembeddedlights,and highlighttrafficdirectionsbycorner

/curved street markings. Therewill be green plantersthatwill havesufficientbollards/plantersgroundembeddedlightstoshowcasethegreeneryintheevenings.Therew illbeuplightinginthewaterbodieswithunderwaterlighting.

The design of lighting and fixture selection in these areas shall harmonize with thelandscape.

Ornamental and pole-mounted light fixtures are to be appropriately scaled for eachlandscape situation. Alternatives to pole lighting shall be considered to provideambientandpathwaylighting.

Accent lighting must be located to avoid glare viewing bright sources from buildingsandpublicareas.

Pavementlightsto be selectedandspacedto provideevenillumination.Intersections,crossings,stepsandrampsto beadequatelyilluminatedforsafety.

Provide adequate lighting and fixture selection for all directional, location and safetysignage.

13.0 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&Hydraulic pump
3.	Version	Lefthandorrighthandas persiterequirement
4.	Opening time orClosing time	Lessthan5seconds
5.	Logiccontrol	Included/624BLD
6.	Drive	Hydraulictypewithpiston&Hydraulic pump
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 additional accessories. 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 anodised aluminium verticalmountings. Colour shall be RAL standard lightcolours, with reflective tapes/strips, if required.The boom shall be swing away type or shall bedetachableboom.Vehicleandthehousing.Theboom shallbereinstatedinasimplemanner by any individual without affecting thefunctionalityofthesystem. TheboomshallhaveREDLEDlightingfor enhancingthevisibilitytothedriverwhileopening&closingofboom barrier.
9.	Housingdimension	IP 44 protection of Barrier body & IP 54 ControlUnit. All housing and internal parts shall be rust&corrosionfreemetalsoralloysofhighstrengthwithsuitableepoxy/powdercoating asapplicable.
10.	Finish	Housing-Epoxy/Powdercoated(colourRAL standardlight colours,orangepreferred).
11.	Power-off	Configurable/Adjustableto 1. Remainopen/closed 2. Automatedopeningandclosing
12.	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.Evenifthebarrieraccidently 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.
13.	Certification	ShallbeCE orISO9001
14.	Mean time between failures(MTBF):	1millioncycles.Systemdoesnotrequireanygreasing/oiling for1millionoperations.

14.0 CLOSECIRCUITTV(CCTV)

Location & Quantity shall be as per approved drawing. The number of CCTVcameras is estimated to be minimum 80 Nos. This number is indicative only,agency shall work out the scope in view of ensuring coverage of all security-vulnerablepoints.

General: CCTV camera shall be provided to cover entrance / exits at all floorsincluding Terrace, Lift lobby staircase, CCTV to be provided in basement andpodium levelparking also.

CCTVCamerashallgenerallycoverall-importantvantagepointsaroundthese buildings.

Road junction & plot periphery area to be covered for CCTV coverage withoutdoorcamerathroughacombination ofPTZcameras& Bulletcameras.

All Control Room, Entrance points and Guard Rooms of Main Gates are to beconnectedwith anIntercomnetwork.

Scope ofWork:

Providing suitable number of IR cameras including bracket / supports aroundthe boundary wall at suitable intervals and all the main gates with suitablemountingarrangementinaVandalProofHousing.Laying,terminating&connecting coppercableswithredundancybetweencameras&control room.

Establishingcontrolroomsforconfiguration,operation,monitoring&maintenance with high resolution 40" LED display along with one workstation.Number of control Room to be as per master layout plan with approve of JDA.Installation, configuration & customization of Network Video Recorder (NVR)with 30 days storage capacity for cameras, Switches, Signal / Power cables,Centralized UPS of suitable capacity to power the entire CCTV System, Polesfor cameras, Power to camera and weather proof enclosure and Surge &lighteningprotectionfor each cameraetc.

Cameras should be of outdoor application, IR Range 50 metre, IR Distance ormore, Min Illumination Colour - 0.2 Lux, B/W - 0.002 Lux, Resolution 1280 x1024pixels:1.3MP @ 30 fsp PALcompatible.

NVRshouldbeofsuitableno'sofvideochannels,havingstoragecapacityfor

45 days, Full DNA support, sophisticated failover and mirroring strategiesamongstmultipleNVRsforincreasedresilienceandredundancy,Policybasedmanagemento ptionsforautomaticdeletionorprotectionofoldfootage,Recording Hard Drive 3.5in SATA Seagate SV35 Series optimizedfor24x7.

Complete system is to be designed as per above requirements and a schemealong with layout and inventory is to be submitted to the JDA for approval,beforetaking upthe installationwork.

15.0 AVIATIONOBSTRUCTIONLIGHTS:

Provision for mounting LED type aviation obstruction lights of reliable designshallbeprovided ontopofTowerincluding 20mhighmasts lightspoles.

16.0 LIGHTNINGPROTECTIONSYSTEM

The earthling 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.

17.0 LIFTS

Provision of lifts in the Hospital will be kept as per National Building Code-2016 /JDA Specifications considering no of floors, height of the building and speedofelevatorswhichshallbesubmittedtoJDA forapprovalbeforecommencementofwork.Atleastoneliftbemadebarrierfreeasperspecifications & 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 upto date.

Scope of work of the successful bidder shall be inclusive of the following andshallbe done bytheagencyatnoextra cost.

Provision of proper ventilation in machine rooms, lift wells and water proof liftpits including lighting &Powerpoint outlets.

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,for approval.

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 assistanceforthe purpose.

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

Typeof 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-center 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 less than onehour.

Type of signal system: All signal & operating fixtures shall be provided withstainless steel faceplates.

Call registration indication in buttons of operating panel.Digitalcarpositionindicatorin

car.

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)withrechargeablemaintenancef ree batterybackup.

Elevator should be equipped with manual as well as automatic rescue devices(ARD).

Infra-redbeamtypedoorsafetydeviceshallbeprovidedfor fullheightof door.

Minimum04No.ofliftsshallbeprovidedineachtowerincluding01No.BedLift.

TechnicalSpecifications:ForLift/Elevator

S. NO.	Item	Specification
1.	DesignationofLifts	Passenger/StretcherElevator –GearlesswithMachineRoom
2.	Capacity	Minimum 13Passenger
3.	CarSpeed	1.75MPS
4.	TotalTravel	32mt.(aprox.)
5.	No.ofStops	5
6.	ClearOpeningforDoor	800MM(W)x2000MM(H)with advance dooropening,ACO/ATO/Aspersite/Asper OEM
7.	DoorSafety	FullHeightInfraredLightCurtain
8.	SafetyDevices	AutomaticRescueDeviceandmanualrescueoperation
9.	OtherMainFeatures	OverloadDevicewithIndicator
		2hoursfireratedlanding doors
		FullLoadBypass
		EmergencyLight
		S.S. HandrailonRear& BothSideWalls
		AlarmButton&threewayintercom includingwiringandintercominGuardRoom.
		VanityMirrorofstandardsize
		DoorOpenandClose Button(SoftTouch)
		PhaseFailure&PhaseReversalProtection
		FloorAnnouncerwithMusicSynthesizer

S. NO.	Item	Specification
		AntiNuisancecarcallprotection
		Liftdoorshallhavedoornudgingfeature
10.	MethodofControl	Duplexifnotpossiblethansimplex,Collective,Selective

11.	Drive/SpeedControl	V3F(VariableVoltageVariableFrequency)withRegenerativeDrive.
12.	Controller	16/32bitMicroprocessor basedwithinbuilt/externalvoltagestabilizer/Asper OEM withregenerativedrive
13.	Entrance	Oneat eachfloorleveland onsameside
14.	LandingEntrance	COPD/TOPDin S.S.honeycombfinish
15.	CarEntrance	COPD/TOPDin S.S.honeycombfinish
16.	TractionMachine	PermanentmagnateGearlessMachineplaceddirectlyabovehoist wayinmachineroom
17.	MachineRoomLocation	MachineRoomontheTop
18.	FloortoFloorHeight	Asperconceptualdrawings
19.	CarEnclosures:	
	(a)CarCeiling	S.S.FinishwithLEDLights&centrifugalblower
	(b)CarPanels	S.S.inanti-scratchfinish(Honeycomb)
	(c)CarFlooring	GraniteFlooring
20.	CarPositionIndicator	Digitalfloorpositionindicatoratall floorsalongwithdirectionofTravelIndicator.
21.	PowerSupplyinMachineRoom	415V;3 Phase; 50HzAC
22.	AuxiliaryPowerSupply	SinglePhase220VAC
23.	MachineFoundation	Themachine willbeplaced directlyabove theHoistWayUponMachineRoomsteelsection, whichshallbe provided bythe bidder
24.	PitDepth	Minimum1600mm/asavailableatsite
25.	GuideRails	TheGuideRailsshould be ofsteeldulytoughenedtocarryloadof Car&Passengers andPrecoated steelbeltrelyJoined/ alignedforsmoothrunningof theElevator/AsperrelevantBIS
26.	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.
27.	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).
28.	Typeof Buffers	PitbuffersasperOEM
29.	ComplianceofAct	NationalBuildingCode2008&asamended
30.	Guarantee &maintenanceetc.	60 months from the date of handing over of lifts along with freecomprehensivemaintenanceincludingreplacementofdefectiveparts
31.	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.

S. NO.	Item	Specification

32.	LicenseandApprovals	The supplier shall prepare the necessary documentation andarrangenecessarypermissionrequiredfortheoperationofliftsfromlocalauthorities if applicableonbehalf of theJDA.
33.	WitnessofTests	Thesuppliershalltest/providefactoryinspectionof theliftinthepresence of Third party/ department Engineer/ Consultants ifdesired.Thedepartmenthoweverreservestherighttowaiveoff thetest.
34.	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.

18.0FIREFIGHTING

Fire Protection System including Sprinkler System,wet-risers,Yard-hydrants andpumps etc.whereverrequired shall be designed and provided as perNBC 2016with Amendments, Updated BIS Codes & Fire Bye Laws. NOC for the Project fromlocalFire Service shall be obtained bytheagency.

MS pipe -class -Cland Valves &Branch pipes shall be of Gun Metal, all other fixtures shall asperSpecifications.

Scopeofwork shallalsobeasunder:

To get the firefighting scheme approved first from local Fire Service before taking upexecutionofwork.

Toexecutetheworkasper approvaloflocalFireService.

Agency shall arrange for obtaining clearance certificate from local Fire Service ofRajasthanGovt.fortheinstallationsofFireFighting system.

Complianceof the FireApproval

It shall be the responsibility of the contractor to ensure compliance with the fireapprovals obtained bythe department.

On successful completion of work, the contractor shall prepare as built drawingswhich have been so approved by the Fire Service incorporating all changes thatmight have been effected during execution of the work and shall assist theMasterArchitectinObtaining the CompletionCertificate.

Coordination

The Contractor shall be required to co-ordinate his activities with all other servicessuchasAir Conditioning,etc.,Electricaland Civil&Interiorsworksite.

Addressable Fire alarm systemGeneral:

The work shall consist of supplying, installation, testing & commissioning of HybridFirealarmsystem.NOChastobeobtainedfromlocalFireService,bythecontractor. The work shall also include planning, designing, preparing drawings andgettingthe drawingsapprovedfromDFO& theJDA.

Automaticfiredetection&Alarmsystem(Hybridsystem)withconventionaldetectors shallbe providedas perNBC 2016(part-4 –fire &lifesafety).

Referencesforinstallation.

IndianStandardIS/NBC2016andFireByeLaws issuedbylocalFireAuthorities.

British Standard Institute / European Standards All Applicable codes and standardsincludingBS EN54.

NFPA- 72NationalFireProtectionAssociations.

All major components of fire alarm system shall be product of a single manufactureras per the list ofapproved make and shall conform to the requirement ofEN54 /VDS / UL / IS approved and designed accordingto DIN VDE-14675 and VDE-0833FireAlarmSystemscodeofpracticeforsystemdesign,installationandservicing.

INSTALLATION

The entire fire alarm system shall be installed in accordance with DIN / BS EN 54Standards/ISandrecommendationsoflocalauthority.

Scheme of manual / automatic fire detection & alarm system shall be based onreference standards. Duly approved layout plan from local Fire Service departmentshallhave locationofManualCall Points,Detector& devices.

Contractor shall develop and get formal approval of Scheme & proposed equipmentfromJDA.

19.0 VENTILATION/EXHAUSTSYSTEM

ThesystemshallbeprovidedasperNationalBuildingCodeofIndia2016andapprovalof ChiefFireOfficer,localFireService,andrelevantI.SCodes.

Following areas shallbemechanically ventilated&exhausted.

Theventilationratesformechanicalventilationofvariousareastobeasper NBC2016 andLocalbylaws.

Basement/Parking Ventilation

EachbasementlevelshallbeventilatedseparatelybymechanicalmeansAsperNBC/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/smokeduties.up to250degreeCelsiusfor2hours.

Freshairsupplyatfloorlevelhavingdropperfrommainductthroughcolumnandexhaust airatceiling level.

20.0 ELECTRICALWORKS

Allthefanmotorswhichwilloperateinnormalmodeshallhave IE-3efficiency.Thefanmotorsrequiredtobeoperated duringfiremode shallbeIE-2efficiency.

Thedetailsofelectricalcomponents /wiresetcforvariousratingsshallbeasunder.Allstarterswillbe providedwithprotectionforoverloadand singlephasing.

S.No.	MotorRating(HP)	ContactorCurrentRating	ProtectionMCB/MCCB	StarterType	CopperConductorArmouredCable	GI Earthing
1.	0.75	10amps	TPMCB	DOL	3X 4sq.mm	2x8Gauge
2.	1.0	10amps	TPMCB	DOL	3x 4sq.mm	2 x 8Gauge
3.	1.5	10amps	TPMCB	DOL	3x 4sq.mm	2x8Gauge
4.	2.0	10amps	TPMCB	DOL	3x 4sq.mm	2 x 8Gauge
5.	3.0	16amps	TPMCB	DOL	3x 4sq.mm	2x8Gauge
6.	4.0	16amps	TPMCB	DOL	3x 6sq.mm	2x6Gauge
7.	5.0	16amps	TPMCB	DOL	3x 6sq.mm	2 x 6Gauge
8.	7.5	25amps	TP+NMCCB	Star-Delta	2no.3x 6sq.	2x6Gauge

9.	10.0	32amps	TP+NMC CB	Star-Delta	2no. 3x 10sq.	2 x 6Gauge
10.	12.5	32amps	TP+NMC CB	Star-Delta	2no. 3x10sqmm	2no. 20X 3strip
11.	15	40amps	TP+NMC CB	Star-Delta	2no. 3x10sqmm	2no. 20X 6strip
12.	20	63amps	TP+NMC CB	Star-Delta	2no.3x16sqmm	2no. 20X 3strip
13.	25	63amps	TP+NMC CB	Star-Delta	2no. 3x 16sqmm	2no. 20X 3strip
14.	30	63amps	TP+NMC CB	Star-Delta	2no. 3x 16sqmm	2no. 20X 3strip
15.	40	63amps	TP+NMC CB	Star-Delta	2no.3x25sqmm	2no.25X 3strip
16.	50	100 amps	TP+NMC CB	Star-Delta	2no.3x25sq mm	2no. 25X 3strip

Acceptable MakesforElectricalWorks

Listofapprovedmakes

S. No.	DescriptionofItem	Makes
1.	FRLSPVC insulated copper wire / Telephonecable/copperconductorcontrolcable	L&T/ Havells/ Polycab/Finolex/RR
2.	HT/LTXLPEaluminumcable	Havells/ Polycab/ KEI/RRKabel
3.	Co-axialTVcable	L&T/Havells/ Polycab/Finolex
4.	SteelConduit	RMCON/AKG/BECISIMarked
5.	Conduitfittings	ISImarked
6.	PVCConduit	AKG /Polycab/JINDAL/ PRECISION
7.	L.T. Panel/MeterBoard	AdlecMundka/ControlandSwitchgearsPvt. Ltd/Tricolite/SPCElectrotechLtd/ Ambit Switchgear Pvt Ltd/ Neptune India/Milestone
8.	MCB/MCBDBandsheetsteelMetal enclosedindustrialsocket,plugtopandIsolators	Legrand/S Siemens/ L&T/ ABB / chneider
9.	Modular type switch/Socket, Telephonesocket,cableTVAntenasocket, ElectronicfanregulatorandGI Boxes	Legrand (Arteor) Or Equvivalent OfHavells / Honeywell / NorthWest/Lutron
10.	LEDfitting	Philips/Crompton/Wipro/
11.	Tube/Vane AxialFlowFan	Kruger/ Greenheck Airflow/ Nicotra/H / umidin/Flaktwood

12.	Ceiling Fan/Exhaustfan(BEE-5Star)	CromptonGreaves/Usha/Orient/havells
13.	Octagonalsteelpole	Bajaj/Valmont/Utkarsh
14.	Conical/ DecorativePoles/Bollards	Bajaj/Philips/Wipro/Jaquar
15.	AirCircuitBreaker	L&T-U Power/ Siemens-3WL/ ABB-Emax/Schneider-Masterpact-NW
16.	MCCB	L&T- Dsine/ Schneider- Compact NSX/ABB-Tmax/Legrand-DPX3/Siemens
17.	Digital Ammeter/ Multi-Voltmeter/ functionmeter	Schenider- conzerv/ Ducati/Secure/AE
18.	Capacitor	Epcos / L&T/ Schneider/ Siemens /CromptonGreaves.
19.	APFCRelay	Epcos/ L&T/ Siemens/ Schneider/Enercon
20.	Power Contactor – AC 3 rating / capacitordutycontactor/starter/ Thyristermodule/Harmonicreactors.	Siemens/L&T/ABB/Schneider
21.	11KVHT(VCB)panelOEM	Siemens/ Schneider/ ABB/ CromptonGreaves
22.	DistributionTransformer(drytypecastresintype)	Crompton Greaves/ ABB/ Schneider/Siemens/ Bharat-Bijlee
23.	Distribution transformer (oil type)is-1180,part2	Crompton Greaves/ ABB/ Schneider/Siemens/ Bharat-Bijlee
24.	PackageTypeSubstation	ABB/Schneider/CromptonGreaves
25.	Solarstreetlightfitting	Philips/Bajaj/Wipro/CromptonGreaves
26.	Risingmains/busduct	Legrand/Schneider/C&S/GE
27.	FireExtinguishers	Safex/Minimex/Superex/ Ceasfire
28.	DieselE operated Power Generating	CumminsIndia/Caterpillar/kirloskar
29.	AMFPanel	OEM/ OEAof DG Set
30.	Alternator	Stamford/LeroySomer/Caterpillar
31.	HDPE/DWCpipe	AKG/ Duraline/Rex
32.	GI/M.S.Pipe	Jindal(Hissar) /TATA
33.	StandardM.S.Fittings&GIfittings	JainsonsIndustries/INDUS
34.	BallValve/ SluiceValve/ CheckValve /Pot/YStrainer/ButterflyValve	Audco/Kirloskar/ Zoloto/ Advance
35.	PressureSwitch	System Sensor/Indfoss/Denfoss
36.	LIFTS	Mitsubishi/ Schindler/Kone/OTIS Theagencyhastogiveatleastthreeoptions out of the make mentioned abovefor lift and the department will be free toselect anyone ofthem.
37.	BMSOperatorWork Station	HP/ Dell/Acer

38.	BMSControllerandPowerSupply/Software	Siemens/HoneywellEBI/Sauter/TAC(Schneider)/ALC
39.	BMSControllerHousing	Enclotek /Rittal
40.	TemperatureSensor&HumiditySensor/EnthalpySensor/LuxSensor / CO Sensor	Siemens/Invensys/Honeywell/Sontay /Greystone/Sauter/Kele/TAC
41.	Pressure Transmitters / Air VelocityMeter	Siemens/Invensys/Kele/Honeywell/Sontay /Greystone/Sauter/TAC
42.	FlowMeter	Forbes Marshal/ Kele/ Sontay/ Greystone/Siemens/TAC/Honeywell/Schenitech
43.	DifferentialPressureSwitch	Siemens/Invensys/Honeywell/Sontay /Greystone/Kele /Sauter
44.	PhSensor/Conductivity/TDS	ForbesMarshal/EndresHauser/Kele/Sontay/Greystone
45.	FlowSwitch/LevelSwitch/LevelIndicator	Siemens/Elektronik/Invensys/Honeywell/Sontay/Greystone/TAC
46.	CurrentTransducer/VoltageTransducer /PowerFactorTransducer / FrequencyTransducer	ABB/SouthemTransducer/Veris/SETO/Sontay/Greystone
47.	Fire/SprinklerMainPump/JockeyPump	Mather&PlattIndiaLimited/Grundfos/Kirloskar/KSB
48.	DieselEngine	Cummins/Kirloskar/ Catepillar
49.	Motor	ABB/ Siemens/ Kirloskar / CromptonGreaves
50.	AntiVibrationMounting	Kanwal Industrial Corporation/Resistoflex/Ewren
51.	Starter	L&T/ Siemens / Crompton/ GE / ABB /BCH
52.	CurrentTransformer(CastResin)	AE/L&T/Kappa
53.	AntiVibration Pad	Cori/Dunlop/DiamondPipeSupport/Easyflex Flexionics/Resistoflex/Emerald
54.	Factoryfabricatedduct	Waves/Zeco/Ductofab/GPSpira
55.	PerforatedwithpowdercoatingM.S./HotdippedG.I.cabletrays	Vinous/Indiana/ steelway/ Slotco/Pilco
56.	AddressableMulticriteriaSmokeDetectors With base / Addressable DuctType Smoke Detectors With base/ FaultIsolatorwithbase/AddressableHeatDetectorswithbase/AddressableManualCallpoints /AddressableControlModule/Addressable Monitor Module / Sounder/Hooter cum Strobe/ Fire Alarm ControlPanel/PASystemPanel/Telephone Jack /Hand Set/ Software/ Speaker	Notifier/Siemens/Bosch/Edward.
57.	ConventionalFireDetectionandAlarmSystem DetectorPanels ManualCallPointsHooters	Daksh/Agni/ Bosch

58.	FireSurvivalCable	Fusion Polymer/ Havells/ Bonton/Rallison/BatraHenlay
59.	Thermo plastic (Textilereinforced)HoseReelISIMark	Mitra/Kesra/ Padmini
60.	StainlessSteelBrachPipe	Safex/Padmini/GETech / NewAge
61.	FiremanAxe/InstallationControlValve	Safex/Padmini/GeTech
62.	2-way/4-wayFBC	Safex/NewAge(Mumbai)/GeTech
63.	SprinklerHeads	Tyco/ HD/ omaxULlisted
64.	Pipe Protection Pypcoat (AW4)Wrapping	IWL/Taxa/Mac-polycoat
65.	RubberBellow	Kanwal Industrial Corporation /Resistroflex/AIP Valves
66.	WindowSprinkler	Tyco/ HD
67.	DelugeValve	Safex/Tyco / HD
68.	Airreleasevalve	Superex/ GeTech/ NewAge/ Safex
69.	WeldingRods	Ador/Esab/Essar/Advani
70.	Fastner	Hilti/Fisher
71.	HoseBox(External)(GIPowderCoated)	SPC Electrotech Ltd/ AdlecMundka/Ambit Switchgear Pvt Ltd/ Milestone/Tricolite
72.	FlexibleDrop(ULApproved)	Safex/HD/Kofulso (Easyflex)
73.	GalvanizedSheet Steel	Tata/Jindal/Sail
74.	IP Based CCTV systemCCTVCameras Bullet, Dome, PTZ CameraNetworkVideoRecorder	Bosch/Axis /Sony
75.	LED TV	Sony/ LG/Samsung
76.	Data Networking SystemInformation	Legrand/Molex/Amp
77.	Cat-6/6ACable	Crestron/Extron/ Kramer
78.	ManagedSwitchforDataNetwork, CCTV system	Cisco/Hewlett Packard
79.	Data Racks	D-link/Legrand/Rital
80.	EPABX	Panasonic/Alcatel/Syltel
81.	TelephoneHandsets	CISCO/Panasonic/Siemens
82.	MDFandTelephoneTag Blocks	Krone
83.	BoomBarriers	Kaba/Magnetic/ SEAA/Makim/ FAAC
84.	SolarPVModules	SkySolar/Tata Solar
85.	Inverter(forsolarpowersystem)	Kaco/ Delta/Schneider/SMA
86.	Cablesforsolarpower (XLPO/XLPE)	Lapp/Havells/Universal/Polycab

87.	StringCombinerBox	Hensel/ Schneider
88.	0.2ClassABTCompliantNetMeter	Secure/L&T/Schneider
89.	WeatherMonitoringStation	SMA/ ABB
90.	SplitAirconditioners	Daikin/ Hitachi/OGeneral/ Mitsubishi
91.	VideoDoorPhoneSystemandsmartlocks	Panasonic/ Samsung/ CISCO/ YALE
92.	Sound system: BGM/ PA System / Theatre/Guest house/Outdoor	BOSE/TWAudio/Aimline
93.	DigitalSignage	Christie/BARCO/Samsung
94.	Geyser	RACold/Jaquar/orient/Crompton/AOSmith
95.	Individualunit UPSInvertorSystem	Eaton/Luminous
96.	InvertorBattery	Exide/ Amaron
97.	Consumer Appliances: Chimney, hob,fridge,microwaveoven,Washingmachine	Siemens/Samsung
98.	Safe	Yale/Godrej/Samsung
99.	RO	Aquaguard/ Zero-B/Kent

2 4.2(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.

Sec VIII

Scope & Specifications ofHorticulture&Irrigationworks

1.0 HORTICULTUREWORKS

The Scope of horticulture work is to provide the whole Guest house withlush green lawns, trees, hedges, shrubs and beautiful flowers so as to providean excellent ambience of Guest house-environment and at the same time makes theGuest house environmental friendly and to make a good impression on the users andvisitors. The contractor has to undertake all such jobs/activities required tomaintain the Guest house premises in a presentable condition and in above mentionedspirit atallthetimewhether suchactivitiesareelaboratedhereunderornot.

The above scope of work Includes designing and its approval from JDA andexecutingthe workasperdrawings.

2.0 LANDSCAPING&PLANTATIONWORKS

While undertaking this work, the contractor shall develop the Lawns, etc. and other activities mentionedbelow.

Ramps, Driveway, DropoffArea, to be made as landscaped features by enclosing in Trellis &planters asapproved byJDA.

Measures for segregating and calming motorized and non-motorized traffic,pedestrian shall be controlled with level differences, Kerbs, dividers and othertraffic controlling measures. Main entrances to the project and the social infrabuildings,driveways, ramps,lawnsshallbe guardedasper approvedbyJDA.

The Agency shall submit the detailed working drawings to JDA along with theLayout, Material and the execution plan for approval before commencing thework.

PLANTATIONWORKS:

The plantsshouldbeasperfollowing specification

i) Theplantsshould befulloffreshand healthyfoliage.
ii) Theplantsshould befreefrominsect,pestanddisease.
iii) Plantshould behealthyandvigorousgrowth
iv) Theplantsshouldbe wellsettledandshouldnotbenewlyshifted.
v) TheplantsshouldbetruetothevarietyandnamedVarietysho uldbetagged.
vi) Therejectedplantsmaterials shouldberemovedfromthesiteimmediately.
vii) MossstickshouldbecoveredwiththeplantsincaseofplantssupplIed withmossstick.
viii) ThePlantshouldbe wellestablished andgood spread.
ix) Goodearthandmanureusedforfillingthepot/polybagfreefroman yinertmaterialandmixed to properratio.
x) Pot/Polybagusedforfillingtheplantsshouldbepropersizegoodqu alitynotdamaged.
xi) Thereshouldbeproperdrainageinpotsforplants ifsuppliedinpots.
xii) Thefloweringplantsshouldalsohaveproperfloweringandshouldb etruetothevariety.

xiii) Allplantshouldhavethetendencyofgrowthandshouldnotbest untedtype.
xiv) Thereshouldbenostagnationofwateronthegroundwhereplanatio nisto bedone.
xv) Properwaterproofingtreatmentmustbedoneoverbasementslab, whereplantation workorgreenareatobe development.

Irrigationwork

Agency shall design the whole irrigation system based on DBR consideringthe requirement of water as per landscape, plantation and other horticulturework.Useofrecycled/treatedwaterbeensuredwithproperlayingofirri gationsystem.

Agency shallproviderobustirrigationsystem whichcansustainin allwealth

Sec IX

ArchitecturalControllingNorms,ScheduleofFinishes/Specifications

Norms Applicable&ScaleofAmenities

The following norms have been adopted for architectural designing purposeswhichshall also befollowed bythe Agency:

	Description	Minimum ApproximateBuilt-upArea(tobeconstructedasperdetailsgiveninthisTenderdocument)
1.	Hospital(Groundfloor +1floors) and, Mumty, Water tank and liftroometc.	4360 Sqm
2.	Staff Quarters, Laundry, Mortuary, Lab,Kitchen etc	1100 Sqm
3.	Sitedevelopment	Outerdevelopmentofcompleteplot / area including compound walls, and retaining wall andgatesasperdesigns approved.
4.	Miscellaneous &AlliedWorksaspernormsof NBC2016andmentioned inthisdocument: i) Detaileddesignanddrawingsforthisbuilding. ii) Architectural,civil,structural,finishing,interiorandfurnishingworks iii) Plumbing&Sanitary. iv) ExternalWaterSupply&Sewerage, StormWater Drainage System, a. RainWater Harvesting includingRechargeWells. v) Elevators/Lifts. vi) ElectricalServices,HTsubstationequipment's,LTdistributionsystem,DGsets,risingmains,UPS,aviationobstructionlights. vii) Interior,Furnishing,machinesandequipments. viii) FireFighting &FireAlarm system. ix) Watersupply&Pumps. x) Site Development & Landscaping including roads, Foot paths,Walkways,tracks,sportsfacilities,swimmingpool, Banquet Lawn,Horticulture works&irrigation system. xi) InternalEl withwiring,fan–fittings,HVAC,CCTV, EPABX,Data xii) Undergroundwatertank withpumphouseetc. xiii) ExternalLighting,LandscapingLighting,Signage,worksCCTV,BoomBarrier,Bollard xiv) ExternalServiceConnections xv) Arrange conferences, site visits, inaugural and handing overfunctions,holdingmeetingsetc.	
5.	Alliedservicesasperrequirementsofserviceprovider orregulatorybody.	

ThefollowingGeneralConditionsforCalculationofbuiltupareaarefollowedwhich shallalsobeadopted bytheAgency:

Theareaofbalconiesmayvarywiththedesigndependingonthearchitectural & structural considerations not exceeding the total balconyareainthe norms basedon theprovisionin thePlinthArea Norms.

Staircase/Circulation areainthesePlintharea norms cater forlow-riseconstruction having a staircase of 1250 mm with only. However, for multi-storiedbuildingswheretheprovisionofliftslobbies,widerstaircase,additionalFireEscapestaircaseandextraspacefortheirentryisnecessary,additionalareaover&abovethestandardplinthareafordifferenttypeswill beallowed forthese provisions.

Wherever necessary. Additional Area required for services like Laundary, Canteen, Porch, ESS,Pumproom,MeterroomGuardroomwithfriskingareawhereeverrequired etc. Will beallowedover &abovethesepprescribedplinthareas.

Shafts forserviceslinesanitary services,electricalandcommunicationservices as well as ventilation shafts for toilets etc. are not to be included inthese Plinth Area Norms. No Utility balcony be located on the main facadeof the building. Special care must be taken in the design so that overallaestheticisnotcompromised.

Location of all the electrical points shall be done as per the furniture layoutproposed andapproved.

AllbuildingsshallbecheckedforthermalcomfortasNBC2016bysimulation and all measures shall be taken to keep the building /s thermallycomfortableforhuman beingaspergiven parametersin NBC 2016.

MinimumFloortofloorheightmustbekeptas perdrawingsapproved by JDA. Railingsshallbeofstainlesssteel(grade304) as perthedesignapproved.

External finishes shall be used as per the climatic conditions, Architecturaldesign&availabilityoflocalmaterials.

Garbage chute shall be provided as per DBR and

Drawings.Completecampustobeelegantlydesigned.

Vehicular free pedestrian movement & Landscape design element shallbe provided.

Provision forbarrier freeaccessasperthe buildingbyelaws,PWD Act2016(withlatestamendments) &NBCmanualshall be provided.

Adequate facility of toilets shall be provided in basement for supportingstaff/maidsandvisitors.

Dual piping system & use of water from Sewage treatment plant for thepurposeoflandscapingandflushing.

Products made from recycled C& D waste material shall be used for non-structural work such as Boundary wall masonry, Kerb stones, Pavers, openparking,drain/manholecovers etc.withthepriorapprovalofJDA.

AdequatewaterproofingshallbedoneonTerraces .

SMC panelwater tanks (ofapproved make and size ofrequirement ofwater for half day) will be installed at terrace. The Under-Ground tankshouldbe ofcapacityofrequirementforoneday.

ScaleofAmenities

S.N.	AREA/WORK	ITEM	MAKE/DESCRIPTION	BASE PRICE
A				
1	**Hospital Building**			
	FLOORING	1. Kota Stone flooring in Common areas and kitchen 2. 600mmx600mm Vitrified Tile Flooring in Chambers and other areas	. P & F 1st quality Heavy DutyVitrified Polished Digital tilesapproved by JDA on floor,skirting and steps etc.in differentsizes (thickness minimum 10mm)with water absortion less than orequal0.08%andconformingtoIS 15622 of approved make in allcolour and shade, laid with 20mm thick CM 1: 4 includinggrounting the joints with whitecement and matching pigmentetccomplete. Sizeupto1.5Sqm	BaseRateof Granite (south) 200Rssqft
	CURTAINS/BLINDS	Manually OperatedRollerBlinds	Manually Operated Roller Blindswith required pelmet as perapproveddesignanddrawingsby JDA.	Base priceRs. 150 sqft

	FALSECEILING	POP FalseCeiling	Providingandfixinginpositi on P.O.P. decorativefalse ceilingover G.I. metal frame work ofapproved. quality and wire mesh asper standard detail. The main G.I.frame (24g x 2" x 1") shall be at2'6" c/c bothways and intermediate frame (21/2" x ¾" x24g) shall be at 15" c/c bothways. The main G.I. member tobe hanged with help of G.I angleof 1" x 1" x 24 gauge andadditional M.S flats 3/4" x1/8"/m.s angle (duly paintedwith red oxide) and dashfasteners and adjustable clampswith nuts and bolts including allnecessaryworkrequire d. Expanded metal mesh (0.07Kg/Sft) shall be firmly stretchedand screwed to the intermediateframe with G.I. washers andaverage 20 mm plaster of paristo beappliedonin twolayers. Necessary provisions shall bemade for cut outs for airconditioners supply, return airgrills, slits, light fittings, smokedetector and music speaker etc.The job shall include makingsteps ceiling, vertical surfacesetc. (PreFunction&PassageAre a) 50% OF CeilingArea.	
2	**Staff Quarters**			

	FLOORING	Tile Flooring	P & F 1st quality Heavy DutyVitrified Polished Digital tilesapproved by JDA on floor,skirting and steps etc.in differentsizes (thickness minimum 10mm)with water absortion less than orequal0.08%andconfor mingtoIS 15622 of approved make in allcolour and shade, laid with 20mm thick CM 1: 4 includinggrounting the joints with whitecement and matching pigmentetccomplete. Sizeupto1.5Sqm	
			with PU polished veener. Therate to include providing 6mmthick seasoned teak woodbeading/lamination to exposededges wherever required complete as per approved design&drawingbyJDA.	
	CURTAINS/BLINDS	Manually OperatedRollerBlinds	Manually Operated Roller Blindswith required pelemet as peraproveddesignanddr awingsby JDA.	Base priceRs. 150 sqft

	FALSECEILING	POP FalseCeiling	Providingandfixinginposition P.O.P. decorativefalse ceilingover G.I. metal frame work ofappd. quality and wire mesh asper standard detail. The main G.I.frame (24g x 2” x 1”) shall be at2’6” c/c bothways and intermediate frame (21/2” x ¾” x24g) shall be at 15” c/c bothways. The main G.I. member tobe hanged with help of G.I angleof 1" x 1" x 24 gauge andadditional M.S flats 3/4" x1/8"/m.s angle (duly paintedwith red oxide) and dashfasteners and adjustable clampswith nuts and bolts including allnecessaryworkrequired. Expanded metal mesh (0.07Kg/Sft) shall be firmly stretchedand screwed to the intermediateframe with G.I. washers andaverage 20 mm plaster of paristo beappliedonin twolayers. Necessary provisions shall bemade for cut outs for airconditioners supply, return airgrills, slits, light fittings, smokedetector and music speaker etc.The job shall include makingstepsceiling,vertical surfaces etc.	

3	**Mortuary**			
	FLOORING	Tile Flooring	P & F 1st quality Heavy DutyVitrified Polished Digital tilesapproved by JDA on floor,skirting and steps etc.in differentsizes (thickness minimum 10mm)with water absortion less than orequal0.08%andconformingtoIS 15622 of approved make in allcolour and shade, laid with 20mm thick CM 1: 4 includinggrounting the joints with whitecement and matching pigmentetccomplete. Sizeupto1.5Sqm	
	FALSECEILING	POP FalseCeiling	Providingandfixinginposition P.O.P. decorativefalse ceilingover G.I. metal frame work ofappd. quality and wire mesh asper standard detail. The main G.I.frame (24g x 2" x 1") shall be at2'6" c/c bothways and intermediate frame (21/2" x ¾" x24g) shall be at 15" c/c bothways. The main G.I. member tobe hanged with help of G.I angleof 1" x 1" x 24 gauge andadditional M.S flats 3/4" x1/8"/m.s angle (duly paintedwith red oxide) and dashfasteners and adjustable clampswith nuts and bolts including allnecessaryworkrequired. Expanded metal mesh (0.07Kg/Sft) shall be firmly stretchedand screwed to the intermediateframewithG.I.washersand average20mm plasterofparis	
5	**Kitchen, Laundary**			

	FLOORING	TileFlooring	P & F 1st quality Heavy DutyVitrified Polished Digital tilesapproved by JDA on floor,skirting and steps etc.in differentsizes (thickness minimum 10mm)with water absortion less than orequal0.08%andconformingtoIS 15622 of approved make in allcolour and shade, laid with 20mm thick CM 1: 4 includinggrounting the joints with whitecement and matching pigmentetccomplete. Sizeupto1.5Sqm	
	CURTAINS/BLINDS	Manually OperatedRoller Blinds	Manually Operated Roller Blindswith required pelemet as peraproveddesignanddrawingsb y JDA.	150 Rs SqftBase PriceofBli nds
	FALSECEILING	PopFalse Ceiling	Providingandfixinginposition P.O.P. decorativefalse ceilingover G.I. metal frame work ofappd. quality and wire mesh asper standard detail. The main G.I.frame (24g x 2" x 1") shall be at2'6" c/c bothways and intermediate frame (21/2" x ¾" x24g) shall be at 15" c/c bothways. The main G.I. member tobe hanged with help of G.I angleof 1" x 1" x 24 gauge andadditional M.S flats 3/4" x1/8"/m.s angle (duly paintedwith red oxide) and dashfasteners and adjustable clampswith nuts and bolts including allnecessaryworkrequired. Expanded metal mesh (0.07Kg/Sft) shall be firmly stretchedand screwed to the intermediateframe with G.I. washers andaverage 20 mm plaster of paristo beappliedonin twolayers. Necessary provisions shall bemade for cut outs for airconditioners supply, return airgrills, slits, light fittings, smokedetector and music speaker etc.The job shall include makingsteps ceiling, vertical surfacesetc. 50% OF CeilingArea	

5	**COMMONTOILET**			
	FLOORING	TileFlooring	P&F1stqualityHeavyDutyVitrified Digital tiles approved byJDA on floor, skirting and stepsetc.indifferentsizes(thicknessminimum10mm)withwaterabsorptionlessthanorequal0.08%andconformingtoIS15622ofapproved makeinallcolourandshade,laidwith20mmthickCM1:4includinggrountingthejointswithwhitecementandmatchingpigment etccomplete.Sizeupto1.5Sqm	
	WALLS	Dado	Providingandfixing1stqualitytiles approvedbyJDAonfloor,withwaterabsortionlessthanorequalto0.08%confirmingtoIS:13753&IS:15622 on Walllaid on a bed ofneat cement slurry finished withflushpointinginthewhitecementmixedwithpigmenttomatchtheshadeofthetile complete .	
		Mirrors Nos10.	Asper designormakeapproved by JDA.	
	SANITARY&CPFITTINGS		P&Fofallthesanitary&CPfittings with all accessories as perdesign&drawingapprovedbyJDA.ArtizeseriesJaquarorEquilient. Quantiesareas commontoiletlayout.	
	HVAC	VENTILATION	P&F exhaust inline fan systemcomplete with all accessories asperdesigndrawing&make approvedby JDA.	
5	**KITCHEN**			
	FLOORING	TileFlooring	P&F1stqualityHeavyDutyVitrified PolishedDigitaltilesapprovedbyJDAonfloor,skirting and steps etc.in differentsizes (thickness minimum 10mm)with water absortion less than orequal0.08%andconforming toIS 15622 of approved make in allcolourandshade,laidwith20mm thickCM1:4includinggrountingthejointswithwhitecementandmatchingpigment etccomplete.Size upto1.5Sqm	

	WALLS	Dado	Providingandfixing1stqualitytiles approvedbyJDAonfloor,withwaterabsortionlessthanorequalto0.08 %confirmingtoIS:13753&IS:15622 on Walllaid on a bed ofneat cement slurry finished withflushpointinginthewhitecementmixedwithpigmenttomatchtheshadeofthetilecomplete (excluding the cost ofcementplasteronwallsand pillar).	
	STONE	Counter	P&F granite counter as per design&drawingapprovedbyJDA.	Base price 200 Rs perSqft
	HVAC	VENTILATION	P&F exhaust inline fan / Hoodsystem complete with allaccessoriesas perdesign Drawing & make approved byJDA.	
			Conditioners supply, return airgrills, slits, light fittings, smokedetector and music speaker etc.The job shall include makingstepsceiling,verticalsurfaces etc.	
	PUMP&MACHINES		P&F all type of pumps andmachine complete with allaccessories required as perdesignanddrawingsapprovedby JDA.	
	SANITARY&CPFITTINGS		P&Fofallthesanitary&CPfittings with all accessories as perdesign&drawingapprovedbyJDA.AriseseriesJaguaror Ebullient.Quantilesareascommon toilet layout.	
	CURTAINS/BLINDS	Manually OperatedRoller Blinds	Manually Operated Roller Blindswith required pelemet as peraproveddesignanddrawingsby JDA.	150Rs SqftBase PriceofBlinds
			BWP ply,providing and TWlipping to exposed edges of Blockboard,polishing/paintingetc. Complete.	

	FLOORING	TileFlooring	P&F1stqualityHeavyDutyVitrified Digital tiles approved byJDA on floor, skirting and stepsetc.indifferentsizes(thicknessminimum10mm)withwaterabsortionlessthanorequal0.08%andconformingtoIS15622ofapprovedmakeinallcolourandshade,laidwith 20 mm thick CM 1: 4 including	
			groutingthejointswithwhite cementandmatchingpigmentetccomplete.Size upto1.5Sqm	
2	**TOILETTYPEA**			
	FLOORING	TileFlooring	P&F1stqualityHeavyDutyVitrified Digital tiles approved byJDA on floor, skirting and stepsetc.indifferentsizes(thicknessminimum10mm)withwaterabsortionlessthanorequal0.08%andconformingtoIS15622ofapprovedmakeinallcolourandshade,laidwith 20mmthickCM1:4includinggroutingthejointswithwhitecementandmatchingpigment etccomplete.Sizeupto1.5Sqm	
	WALLS	Dado	Providingandfixing1stqualitytiles approvedbyJDAonfloor,withwaterabsortionlessthanorequalto0.08%confirmingtoIS:13753&IS:15622 on Walllaid on a bed ofneat cement slurry finished withflushpointinginthewhitecementmixedwithpigmenttomatchtheshadeofthetilecomplete(excludingthecostof Cementplasteronwallsandpillar).	
	FALSECEILING	GridCeiling	Providing and Fixing 10mm thk e-board/bisonboardfalseceilingfortoiletsusingpowdercoatedAluminiumwallanglessectionsof25mmx25mmof24guagewith suspensionsusingAluminium angle of25mmx25mm includingscaffoldingstagingatallfloor levelsetc complete	

	OPERATIONALITEMS		P&Fofalltheoperationalaccessories like geyser, hand dryeretcasperdesign&drawing approvedby JDA.	
	SANITARY&CPFITTINGS		P&Fofallthesanitary&CPfittings of premium quality thancommontoiletsanitary&CpFittingswithallaccesseriosasperdesign & drawing approvedbyJDA.ArtizeseriesJaquarorEquilient.Quantiesareas commontoiletlayout.	
	HVAC	VENTILATION	P&F exhaust fan/ inline fansystem complete with allaccessories as per designdrawing&makeapprovedby JDA.	
3	**TOILETTYPEB**			
	FLOORING	TileFlooring	P&F1stqualityHeavyDutyVitrified Digital tiles approved byJDA on floor, skirting and stepsetc.indifferentsizes(thicknessminimum10mm)withwaterabsortionlessthanorequal0.08% and conforming to IS 15622ofapprovedmakeinall	
			colourandshade,laidwith20mmthickCM1:4includinggrountingthejointswithwhitecementandmatchingpigment etccomplete.Sizeupto1.5Sqm	
	WALLS	Dado	Providingandfixing1stqualitytiles approvedbyJDAonfloor,withwaterabsortionlessthanorequalto0.08%confirmingtoIS:13753&IS:15622 on Walllaid on a bed ofneat cement slurry finished withflushpointinginthewhitecementmixedwithpigmenttomatchtheshadeofthetilecomplete (excluding the cost ofcementplasteronwallsand Pillar).	

	FALSECEILING	GridCeiling	Providing and Fixing 10mm thk e-board/bisonboardfalseceilingfortoiletsusingpowdercoatedAluminiumwallanglessectionsof25mmx25mmof24guagewith suspensionsusingAluminium angle of25mmx25mm includingscaffoldingstagingatallfloor levelsetc complete	
	OPERATIONALITEMS		P&Fofalltheoperationalaccessories like geyser, hand dryeretcasperdesign&drawing approvedby JDA.	
	SANITARY&CPFITTINGS		P&Fofallthesanitary&CPfittings of premium quality thancommontoiletsanitary&CpFittingswithallaccesseriosasperdesign & drawing approvedbyJDA.ArtizeseriesJaquarorEquilient.Quantiesareas commontoiletlayout.	
	HVAC	VENTILATION	P&F exhaust fan/ inline fansystem complete with allaccesserios as per designdrawing&makeapprovedby JDA.	
4	**OUTERDEVELOPMENT**			
	FLOORING	80 mm Interlocking Tile flooring/ Cement Concrete pavement flooring	As per BSR specifications	
			Developmentareaathardscapeareawithalltypeofbasepreparing.	
	FABRICATIONWORK		MSFencingworkonboundarywalloranytypeogfabricationworkrequiredforouterdevelopmentasperdesignand drawingapproved byJDA.	
	COMMONWORKSINALLUNITS			
	POPWORK		Providing and applying plaster ofparisputtyof2mmthicknessover plastered surface to preparethesurfaceevenandsmooth complete	

	INTERNALPAINT		Wallpaintingwithplasticemulsion paintofapprovedbrandandmanufacturetogiveanevenshadeincludingallscaffolding:Two or more coatsonnewworkincludingpreparation of basewith primer,putty,lippyetccompleteinall respect	
	EXTERNALPAINT		Finishingwallswithtexturedexterior paint of required shadeas per approved colour completeas per manufacturersspecificationsincludingprimercoatandprotectingcoatTrowel Finishav. thickness 2000 to 2500microns.	
	SSRAILING		Providing and fixing stainlesssteel (Grade 304) railingmade ofHollow tubes, channels, platesetc., includingwelding, grinding,buffing, polishing and makingcurvature(wherever required)and fitting the same withnecessary stainless steel nuts and boltscomplete, i/c fixing the railingwith necessary accessories &stainless steel dash fasteners,stainless steel bolts etc., ofrequired size, on the top of thefloor or the side of waist slabwith suitable arrangement asper approval of Engineer-in-charge, (for payment purposeonly weight of stainless steelmembers shall be consideredexcluding fixing accessories suchas nuts, bolts, fastenersetc.) asperdesign&drawingapproved by JDA.	

	ALUMINIUM DOORWINDOWS		Aluminium structural glazingwork-Providing and fixing ofspecially designed highperformance semiunitizedsystem using aluminium sectionof Jindal/ Hindalco/Mahaveermake for main mullion, cornermulliom , main transom and top& bottom transom for mainframe based structural glazing.Mullion & Transom- shall be outof aluminium section size of 63.5x58xweight1.350kg/m. Anodizing - The surface ofaluminium section shall befinished with 15 micronanodizing in required shade.Silicon- D/C 995/SSG 4000structural sealent. WeatherSilicon- 789/ ultra proof.Singleshutter section for Glass panel- 19.0x19.0x0.250kg/m.M.S. clamp-size-75x75x6with10
			mm Hilti fastners fixing formullions.Glass 6mm thickpyrolatic solar control coatedheat reflective and tougnenedglass of saint Gobain make ofapproved shade.(glasses to befixed using spacer tape andsealing the glasse joints with 789Dow Coming weather proofingsilicon) The whole system afterinstallation shall be completelywater proof/ weather resistant,sealed against air and watercomplete as per drawings,requirements, specifications andasdirected byEngineer.asper design & drawing approved byJDA.	
	FLUSHDOORS		P&F laminated od Vennerfinshed complete flush doors 45MM Thick with all accesserioslike hinges, lock, handels etc asperdesign, drawing&make approvedby JDA.	

	WATERPROOFINGWORK		Providingandlayingwaterproofing treatmenttoverticalandhorizonta lsurfacesofdepressedportionsof W.C.,kitchenandthelikeconsisting of : i) Ist course of applying cementslurry @ 4.4 Kg/sum mixed withwaterproofingcompoundcon formingtoIS2645inrecommended proportionsincluding rounding off junction ofverticalandhorizontalsurface. ii) IIndcourseof20mmcement	
			plaster 1:3(1 cement: 3 coarsesand) mixed with water. proofingcompoundinrecommend edproportion including rounding offjunctionofverticalandhorizont al surface.. iii) IIIrd course of applying blownor residual bitumen applied hotat1.7Kgpersqm.ofarea. iv) IVthcourseof400micronthick PVCsheet.(Overlapsatjoints of PVC sheet should be 100mmwideandpastedtoeachoth erwithbitumen@1.7 Kg/sqm.)	

			Providing and laying waterproofing treatment in sunkenportion of WCs, bathroom etc.,by applying cement slurry mixedwith water proofing cementcompoundconsistingofapplying : a) first layer of slurry of cement@ 0.488 kg/sqm mixed withwaterproffingcementcompound @0.253 kg//sqm .Thislayer will be allowed to air curefor4 hours. b) Second layer of slurryofcement @ 0.242 kg/sqm mixedwith water proffing cementcompound @ 0.126 kg/sqm Thislayer will be allowed to air curefor4 hours followed by watercuringfor48 hours. The rates includes preparation ofsurfacetreatment&sealingofall joints ,corners,junction withpolymermixed slurry.	
			Providing & applying Three coatof pure Acrylic Water basedelastomeric brush appliedinsulating coatingon exteriorsurface overwaterproofing slurrycoat , initial coat of 50-75 micronthickness with diluting 1 part ofchemicalwith 2 parts of cleanwater, over which applying 2coats at 2Hrs,intervalseachwith diluting 1 part of chemicalwith 10% of clean water for totalthicknessof400to450microns (coveringarea 0.9Sq.M/Kgof	
			chemical) including preparationof surface by cleaning, brushingand dust removing, scaffolding ifnecessary etc., with contractor'slabour, tools,machinery etc,complete as directed by EngineerinCharge.	

			Providingandlayingintegralcement basedwaterproofingtreatmentin cludingpreparationofsurfaceasre quiredfortreatmentofroofs,balco nies,terracesetcconsistingoffollo wing operations. (a)Applyingandgroutingaslurryco atofneatcementusing 2.75 kg/sqm. of cement admixedwithproprietarywaterpr oofingcompoundconformingtoIS. 2645 over the RCC slab includingcleaningthesurfacebefor etreatment. (b) Layingcementconcreteusi ng broken bricks/brick bats 25mm to 100mm size with 50% ofcement mortar 1:4 (1 cement : 4coarsesand)admixedwithpropri etarywaterproofingcompoundco nformingtoIS:2645 over 20 mm thick layer ofcementmortarofmix1:4(1ceme nt :4 coarse sand)admixedwithproprietarywaterpr oofingcompoundconformingtoIS: 2645torequiredslopeandtreating similarlytheadjoiningwallsupto30 0mmheightincludingroundingofju nctionsofwallsandslabs. (c) Aftertwodaysofpropercuring applying a second coat ofcementslurryadmixedwithprop rietarywaterproofingcompoundc onformingtoIS:2645. (d) Finishing the surface with 20mmthickjointlesscementmorta r of mix1:4 (1 cement :4coarsesand)admixedwithpropri etarywaterproofingcompoundco nformingtoIS:2645 andfinallyfinishingthe surfacewithtrowelwithneat	

			cementslurryandmakingof300x300xmm square (e) Thewholeterracesofinishedshallbefloodedwithwater fora minimum period oftwo weeks forcuringandforfinaltest .Allabove operations to be done inorderandasdirectedandspecifiedbytheEngineer-in-Charge. Withaveragethicknessof120mmandminimumthickness atkhurraas65mm.	
	MATKA FILLING/SUNKENFILLING	**SunkenArea /AuditoriumArea**	P&F matka filling complete withalltypeofneceesoryworkforbaseandfinishedsurfacepreparationasperdesignand drawingapproved byJDA.	
			Waterproofingworkmentionedin Chapter-Eshallbeapplicable wherevernecessary.	
	LIFTS		P&Fasperapprovedspecification, make,designanddrawingapprovedbyJDA.	
	OUTERDEVELOPMENT		Complete outer development asperconceptual,designanddrawingapprovedbyJDAincludinglandscapework,Lighting work,hardscapeworketc.	
	ELEVATIONALWORK		To be done as per designanddrawingapprovedbyJDA	
	FABRICATIONWORK		Structural steel work in approvedsectionasdesign&drawingapprovedby JDA section,fixedwithorwithoutconnectingplate including cutting, hoisting (	
			heightupto10m),fixinginposition and applying aprimingcoatofapprovedsteelprimerall complete.	

	BMS		Terminologyandacronyms.BuildingManagementSystems(BMS)alsoknownasBuildingAutomationSystems(BAS),BuildingManagementandControlSystem(BMCS),DirectDigitalControls(DDC)andBuilding Controls. Followingfunctionswillbecontrol by this system: -Lighting.- Heating,ventilationandairconditioning(HVAC).- Fire,smokedetectionandalarms.- Motiondetectors,CCTV,securityandaccesscontrol.- ICT systems.- Lifts.-Shadingdevices.- Smartmeters	

Section X
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	3/8th	3/4th	Full
		(Rs. …….)	(Rs. …….)	(Rs. …….)	(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/ diploma in design from a reputed design institute and at least fifteen (15) years of total professional experience

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

(a) Museum/ Exhibit/ Space design;

(b) Art & Graphics designing;

(c) content Research and Curation.

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.

Section XI

Scope of Work, Planning,Designing&Safety

ScopeofWork,Planning,Designing&Safety

1. SCOPEOFWORK

Thescopeofworkhasbeenelaboratedherebroadlybutthisshallbereadwithdetailsgivenelsewherein thisdocumentanddrawingsattached herewith.

ScopeofArchitectural Work:

1. **The successful bidder has to submit atleast three conceptual plans for the project before the JDA committee and the committee reserves the right for approval of plan.**
2. **The qualified bidder has to submit the planning and working drawingsof approved plan and finally to be vetted from MNIT or IIT at contractors cost. The structural designs should be prepared using latest software's. The same will need approval by JDA before execution.**
3. Preparationof Workingdrawingsandtheir approvalfromJDA.
4. TheAgencyshallprepareCADdrawingsandgetitapprovedbyJDA&usingstructuraldesign, integrate all aspects of the project into a BIM model which will be shared & usedfor construction.
5. Complete internal finishes shall be as per Schedule of finishes and drawings as approved byJDA.

StructuralDesign & Construction

The Structural design should be prepared using latest version of software used for structural design. ReinforcedCementConcreteStructuralWorks/ pre stressedconcretestructureconstructionas requiredfortheBuilding.

The scope consists: RCC/Prestressed concrete structural Design, preparation of drawings forthebuildings,basementsforallrequiredelementsofbuildingasperscopeofworkandArchitectural Drawings as approved by JDA. The detailed structural design and RCC shall bedesignedforuseofsteel form worksystem.

The Agency shall give the presentations and atleast three conceptual drawings to JDA after award of work on thedesign-schemes to be adopted before taking up the actual design work. A kick off meeting shallbeorganized byAgencyforthesame.

The procuring entity requirements (section IV) is the part of the tender document. Based on this section,thedetaildesignand drawings shallbepreparedbytheAgency.

Design calculations along with drawings shall be submitted by Agency for due vetting by theDesignConsultantapproved by JDA.The Agency shall get the design proofchecked/vetted byIITorMNIT.

Thefees/chargesofproofchecking/vetting ofdesignsetc.istobe borne byAgency.

TheAgencyhastheobligationtomakeasmanychanges/modification(s)asrequiredin

ArchitecturaldrawingsoninstructionofJDA/Local Statutory Authorities.

The Agency shall provide the structural stability certificate to JDA. However, the checking andvetting of design/drawings shall not absolve the Agency from the responsibilities of any failure inthe structural design and RCC design during construction as well as during the specified lifeperiodofthestructures.

TheAgencyshallsubmitallthesubmittalslikedesigns,drawings,documents,reports,schedules etc. in minimum six number of hard and six number of soft (CD/DVD) copies. TheAgencyshallalsosubmitminimumsixnumberofhardandsixnumberofsoftcopiesofdrawingsanddesigns,after vettingof designs,forissueofgoodforconstruction(GFC)drawings.

It shall be the responsibility ofbidder to carry out the Geo-Technical investigation at his owncost asperrelevantIScode.

Agencyshallgettopographicsurveydonefortheiruseinplanninganddesigningofthecampus. The Agency shall collect data/information, whichmay beneeded for completingthejob.

Design and Drawings prepared by the Agency shall be the property of JDA and Agency cannotissuethesameto anyother person/organization oruseforanyotherproject.

JDA will not be responsible for any lapse/s and /or losses, if so occurs, due to absence of anydata/knowledge.Theinformationandsitedatagiveninthedrawingsormentionedinthistender document are furnished for general information and guidance only and JDA does nottake responsibility for their accuracy. It is advised that the Agency get itself satisfied for allpossible contingencies, situations, bottlenecks and acts of co-ordination, which may be requiredbetween the different agencies and due to site conditions. It shall be deemed that agency hassatisfied itself as to the nature and location of work, general and local condition and particularly,thosepertainingtotransport,handling,availabilityandstorageofmaterials,availabilityof labour /workforce, weather conditions at site, general grounds/ sub-soil conditions and all otherconditions required to execute and complete the work. The agency shall have to quote itsoffer/ratesaccordinglyandno claimin thisregardwill beallowed.

BearingCapacity

It shall be the responsibility of bidder to carry out the Geo-Technical investigation at his own cost as per relevant IS code and based on the geotechnical reports, allowable safe bearingcapacityistobe consideredforstructuraldesign.

Scopeof Works

Plumbing&Sanitary

Scope of work consists of: Detailed Designing/preparation of Shop drawings and its approval(referenceofDBRshallbetaken);Supply,fabrication,Construction,InstallationandCommissioningandobtainingApprovalandConnectionfromPHED/NagarNigam /JVVNL/Trafficpolice/etc.Jaipur

The Plumbing/Sanitary Design & Schematic/Line drawings are part of Scope of work. Detailedfabrication/execution drawings & shop drawings, as required at site are to be prepared by theAgencyandgotapprovedfromJDAbeforeproceedingwith the work.

The preparation of Sanitary/Plumbing fabrication, & shop drawings expressly (but not limitedto) includes:

i. Integrationofdetailed&shopdrawingswithCivil/StructuraldetailspreparedbyAgencyforeachbuildingandobtaining approvalofJDA.

ii. Preparationoffabrication&shopdrawingsonasoftwarelikeAutoCADetc.ofeachandeveryparto fbuildinghavingasanitary/plumbing aspect within Scope of work on suitable scale.

The Execution of Plumbing/Sanitary work for buildings /spaces as per Scope of the work readwithTechnicalSpecificationsandDrawings.TheSleeves,cutout,Drainagearrangement,embedment, concealed piping, hot & cold-water arrangement, overhead tanks, water recyclingsystem etc. and connecting the service to the main line of PHED/ Nagar Nigam Jaipur areexpresslyincluded (butnotlimitedto)inthescopeof work.

The toilets in all floors to be completely fitted & finished with all plumbing & sanitary fixtures andfitting,completelyready foruse.

TheAgency shallprovideexposedgaspipelinesto thelocationasindicatedondrawingsmaking itfully functionaland connectedtothegasbank.

External Water Supply & Sewerage, Storm Water Drainage System, Drainage System,Rain Waterharvestingpits.

ThescopeofworkoftheAgencyshallconsistof:- DetailedDesigning/preparationofalldrawings(integrationofabovesystemswithshopdrawings)anditsapproval;Supply,fabrication, Construction, Installation and Commissioning and Obtaining Approval from JDA/LocalBody.

TheExternalWaterSupply&Sewerage,StormWaterDrainageSystem,DrainageSystem,RainWaterHarvestingpits,Design&Schematic/Linedrawingsispartofthescopeofwork.

However, detailed fabrication/execution drawings & shop drawings, as required at site are to beprepared by the Contractor and shall be got approved from JDA before execution of the work.ExternalWaterSupply& SewerageWorkforthisarea shall beexecuted bytheAgency.

The execution of work for above scope of the work read with Technical SpecificationsandDrawings and connecting the services from first manholeto the main line of the Agency likePHED/ NagarNigamJaipurincludingapproval fromthePHED/NagarNigamJaipur.

Design, installation, testing, commissioning and handing over of the above services with allservicesinrunningconditionis included inContractor‘sscopeofwork.

SiteDevelopment &Landscape

The scopeofwork oftheAgencyshallinclude:

Construction of Internal Roads, Berms, Pathways, lighting, Kerbs, open parking space, entrygate, compound wall etc. including connecting with the external road network as per approveddrawingandTechnical Specification.

Hard and Soft Landscape in open land area including all horticulture operation, earth filling,grassing, tree plantation etc. as per Drawing and Technical Specification. Hard landscape shallbe done to achieve a high quality urban environment with permanent maintenance friendlyfeaturesusinggranitesin varietyofanti-skidfinishes.

Work to include built in planters & seating, large tree planters in stone, bush / ground covers inplanters, street furniturein monolithicstone benches.

Street furniture to include litterbins, bollards, Fire tender path markers etc. willbe developed, approved & installed. Fire tender path to be maintained & marked around allBlocksas perFirenorms.

Ramp entrances & exits and all cot-outs /shafts to have MS Trellis with Multiwall polycarbonatecanopiesasperdetaileddesignsoastosheltertheentrances.

DetailedDesignforworks suchasStainless-Steelworks/Art worksetc.

SewageTreatmentPlant (STP)

Sewage Treatment Plant shall be based on MBBR (Moving Bed Bio Film Reactor) Technology.STPshallbeprovidedundergroundwhichwillbeusedtocollect,hold,recycle&redistribute

Water. The waste will be collected from sewerage network. The distribution will be done tohorticulture & to dual plumbing network in toilets for flushing & to the proposed constructionsites.

Thescopeconsists**:**Detaildesign/preparationofdrawingsbasedonDBR,DetailedDesigning/preparation of Shop drawings and its approval, Supply, Fabrication, Construction,Installation and Commissioning and obtaining statutory approval from NNJ/ PHED/ JDA forCommissioning.

SolidWasteManagement

The agency shall propose a system for solid waste management including segregation of wetand dry waste. Agency shall execute the system after due approval of JDA which includesinstallation of collection chambers for garbage, colour coded dustbins for waste collection andsegregation. Agency shall also provide trolleys (mechanical) of adequate sizes for collection ofwaste and disposal of the same at dedicated place. The agency shall also provide convertor forproducing compost manure from available wet waste as per direction of MoEF while accordingenvironmentalclearance.

WATERCONNECTION

The scope of work consists of detailing and calculating water demand for the project .Agencyshall obtain water connection of suitable from service provider i.e. PHED Jaipur. The agencyshall execute all necessary piping etc. to bring the water supply to the collecting tank to beconstructed by the agency as a scope of work. Alternate arrangement to maintain water supplybyprovidingtube wellsshallalso be donebyagencywith dueapprovals.

DiversionofServices

Allworkspertainingtoservicesincludingrerouting/diversionofservices,routinetesting,installation etc., embracing in one or more than one process shall be subject to examination andapproval to each stage thereof by the JDA or concerned department as would be notified by theJDA or accredited representative when such stage is ready. In default of such notice, the JDAshall be entitled to appraise the quantity and extent thereof and the decision of JDA or hisaccreditedrepresentative in thisregardshall befinal and binding.

The Agency will not have any claim in case of any delay in removal of trees or shifting, raising,removing of telephone or electric lines (overhead or underground), water and sewer lines andotherstructuresetc.,ifany,which maycomeinthe wayofthe work.

WaterSupplyandElectricity

The Agency shall carry out construction activities while maintaining and permitting the access &useofall amenities,services.

Arrangementofwaterfordrinkingpurposeinadditiontothewaterrequiredforconstructionwork is also to be made by the Agency at his own cost. The Agency shall also make his ownarrangement forobtaining electricconnection (s)andmakenecessarypaymentdirectlytothedepartmentconcerned. JDAwillhowevermakeallreasonablerecommendations totheauthorityconcernedin thisregard.

The Agency shall make his own arrangement of water for completion of work and nothing will bepaid on this account. The Agency shall get the water tested with regard to its suitability andconforming to the relevant IS Code. The Agency shall obtain written approval from the JDAbefore he proceeds by using the same for execution of work. The Agency shall arrange recycledwater for construction purpose from STPs of nearby areas/colonies at his own cost. In case theabove supply is short of total requirement of water for construction purpose, then the Agencyshallarrangesuitable waterathisowncost.

Scope ofplanning work

ArchitecturalPlanninganddesign

Preparation of detailed drawings for the entire work followingunified bylaws Rajasthan 2017(orlatest applicable byelaws at the time of design finalization)/ National Building code 2016 and asper Specifications/Conceptualdrawingsgiven inthisdocument.

Preparation of interior design and Room Wise Equipment/furniture layout / furnishing plans.Equipmentlayoutdrawings to be at1:100 scale orany othersuitable scale as perpriorapprovalofthe JDA.

Any other designing and detailing required for comprehensive planning and designing of theproposedproject.

Structuralplanning anddesign:

Framing and preparationof structural system.

Building/structure wisestructuralanalysisand designusinglatestSoftwarewhich shall be madeavailabletoJDA.

Preparationofbuilding/structurewisepreliminarystructural drawings.

Preparationofbuilding/structurewisedetailedstructural GoodforConstruction‘drawingsand gettingthemvettedfromMNIT orIIT.

3D Model minimum size 6’X 4’, and walk throughof theprojectalsotobeprovidedbycontractor.

Thestructuraldesignshallbecarriedoutintermsoflatesteditionsandup-to-datecorrection/amendment/erratаofBISCodes(BureauofIndianStandards),otherrelevantseismic/other codes for making Building Earthquake Resistant, sound engineering practices andas desired by the Employer. The Consultant will assist the agency in proof checking of structuraldrawings with Reputed Engineering Institutes like a) IITs b) MNIT as appointed by the JDA forproof checking of structural drawings / proposals. The fee for proof checking shall be borne by the agency. The consultant willprovide relevant drawings and documental support with such Institute approved by JDA as andwhenrequiredand asperthedirection ofJDA.

Submission of all design calculations in hard and soft copies as per the direction of JDA. Anyotherdesigninganddetailingrequiredforcomprehensiveplanninganddesigningoftheproposedbuilding.

MinimumsixsetsofallDrawingsshallbesubmittedinhardcopiesfreeofcost.However,incase additional sets of drawings in hardcopy are essentially required, the same shall also beprovidedfree ofcostandnothingextrashall bepayable.

ServicesandMiscellaneouswork

Schematic planning and designing of Internal Electrification, Automatic Fire Alarm System, wetrisers, fire-fighting system, Sprinklers, Fire sensing Fire egress pathways, security system,CCTV, access control system, UPS, TV, Point wiring, Dish antenna, call bell system, Lifts,Electric Sub Station buildingwith all equipment‘s and DGSetsand load factor/DGSetspecifications, external lighting, car parking, solar power generation over building and any otheressentialservicesasperrequirementoftheJDAandalsorequiredforsatisfactorycompletionofproject.

Interiorand Furnishing work

Schematic planning and designing of complete interior and furnishing work of all component ofbuilding complete with specification as per requirement of JDA and also required to makecompleteHospital Building functional.

TreeCuttingPermission

AllnecessaryapprovalsrequiredfortreecuttingshallbetakenbytheAgency.Thecompensationfee,costofcompensatoryplantationoranyothersuchfeepayabletoGovernment Body shall borne by agency. However, the efforts

shall be made to Transplantmaximum trees on the site in consultation with Forest Department. The cost of transplantationshallbe bornebythe agency.

Adherenceto Approvedplans

The agency shall adhere to the building plan which has been approved by various Authoritiesandplan accordingly.

JDASiteOffice

The Agency shall construct site office (semi-permanent structure) for JDA officers and staff,which should be equipped with all necessary equipment's required for functioning the office. Thearea of this office should not be less than 100 Sqm with pantry, conference room, toilets andother requisite facilities. A proposal of site office shall be submitted by the agency 15 days afteraward of work and the same should be constructed and made functional within 45 days afterapprovalofJDA.

The Agency shall provide necessary Air Conditioners, lighting and fixtures i/c fan, RO etc. Twooffice attendants and four data entry operators shall also be provided by the agency during thewhole agreement period. AMC charges, Electricity bill, water supply bills, RO/drinking water billsetc. shall be borne by the agency. The agency shall provide the following furniture (new) for useofJDA staffatsiteoffice.

S.No.	Articles	Quantity
1.	Executivetable(wooden)withsideracks	3 Nos.
2.	ExecutiveChair	3 Nos.
3.	OfficeTables	5 Nos.
4.	OfficeChairs	5 Nos.
5.	SteelAlmirah	4 Nos.
6.	Conferencetable(for30seats)	1 Nos.
7.	Conferencechairs	12 Nos.
8.	Digitaldisplayarrangement&soundsystem	1set
9.	Four wheelerforstaff	1Nos.

2. SAFETY, HEALTH AND ENVIRONMENT (SHE)ProtectionofEnvironment

The Agency shall take all reasonable steps toprotect the environment on and offtheSite and to avoid damage or nuisance to persons or to property of the public or otherresultingfrompollution,noiseorothercausesarisingasaconsequenceofhismethods ofoperation. The Agency shall berequired to follow allthe rules/norms ofNationalGreenTribunal applicable tothiswork.

During continuance of the contract, the Agency and his sub-agencies shall at all times,abide by all existing enactments on environmental protection and rules made thereunder, regulations, notifications and bye-laws of the State or Central Government, orlocal authorities and any other law, by-law, regulations that may be passed or notificationthat may be issued in this respect in future by the State or Central Government or thelocal authority. However, Salient features of some of the major laws that are applicablearegiven below:

Water Pollution is to be prevented as per **The Water (prevention and Control ofPollution) Act, 1974** which provides for the prevention and control of water pollution andthe maintaining and restoring of wholesomeness of water. ‗Pollution' means such contaminationofwaterorsuchalterationofthephysical,chemicalorbiologicalproperties of water or such discharge of any sewage or trade effluent or of any otherliquid, gaseous or solid substance into water (whether directly or indirectly) as may, or islikely to, create a nuisance or render such water harmful or injurious to public health orsafety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or tothelifeandhealthoranimalsorplantsorofaquaticorganisms.

Air Pollution is to be prevented as per **The Air (prevention and Control of Pollution)Act, 1981** which provides for prevention, control and abatement of air pollution. ‗Air Pollution'meansthepresenceintheatmosphereofany‗ airpollutant',whichmeansany solid, liquid or gaseous substance (including noise) present in the atmosphere in suchconcentration as may be or tend to be injurious to human beings or other living creaturesor plantsorpropertyorenvironment.

Environment is to be protected as per **The Environment (Protection) Act, 1986** whichprovides for the protection and improvement of environment and for matters connectedtherewith, and the prevention of hazards to human beings, other living creatures, plantsandproperty.‗Environment'includeswater,airandlandandtheinter-relationshipwhich exists among and between water, air and land, and human being, other living creatures,plants,micro-organismand property.

The public Liability Insurance Act, 1991: This provides for public liability insurance forthe purpose of providing immediate relief to the persons affected by accident occurringwhile handling hazardous substances and for matters connected herewith or incidentalthereto. Hazardous substance means any substance or preparation which is defined ashazardoussubstanceundertheEnvironment(Protection)Act1986,andexceedingsuch quantityasmaybespecifiedbynotificationbytheCentralGovernment.

ConditionsofNationalGreenTribunal

Theagencyshall notstore/dumpconstructionmaterialordebrisonthemetaledroad.

The agency shall getpriorapproval fromJDA/NNJ/Trafficdepartment forthe areawhere the construction material or debris can be stored beyond the metaled road. Thisarea shall not cause any obstruction to the free flow of traffic /inconvenience to thepedestrians/public in general. It should be ensured by theagency that no accidentsoccur because ofsuch permissiblestorage.

The agency shall take appropriate protection measures like raising wind breakers ofappropriate height on all sides of the plot/area to ensure that no construction materialdustflyoutsidethe plot area.

The agency shall ensure that all the trucks or vehicles of any kind which are used forconstruction purposes/or are carrying construction material like cement, sand, earth andother allied material are fully covered. The agency shall take every necessary precautionthatthevehiclesareproperlycleanedanddustfreetoensurethatenroutetheirdestination,thedust,sando ranyotherparticlesarenotreleasedinair/contaminateair.

The agency shall provide mask to every worker on the construction site and involved inloading,unloadingandcarriageofconstructionmaterialandconstructiondebristopreventinhalation ofdustparticles.

Theagencyshallcompulsorilyuse wet jetingrindingandstonecutting.

The agency shall comply with all the preventive and protective environmental steps asstatedinthe MoEF guidelines,2010.

The agency shall carry out on-Road-Inspection for black smoke generating machinery.Theagencyshall use cleanerfuel.

TheagencyshallensurethatallDGsetcomplyemissionnormsnotifiedbyMoEF.

The agency shall use vehicles having pollution under control certificate. The emissionscan be reduced by a large extent by reducing the speed of a vehicle to 20 Kmph. Speedbumps shall be used to ensure speed reduction. In case where speed reductions cannoteffectivelyreducefugitivedust,theagencyshalldiverttraffictonearbypavedareas.

The agency shall ensure that the construction material is covered by tarpaulin. Theagency shall take all other precaution to ensure that no dust particles are permitted topollute airqualitybecause ofsuch storage.

The paving of the path for plying of vehicles carrying construction material is morepermanentsolutiontodustcontrolandsuitablefor longerdurationprojects.

AsperEIANotificationof2006,sufficientgreenbeltaroundthebuildingshallbeprovided.Suchgreenbelts shallbeinexistencepriortoapplyingforhandingitover.

Any violation of orders of MoEF including guidelines of State Government, SPCB or anyofficer of any department shall lead to stoppage of work for which Agency shall beresponsibleand nohindrance shall be accountedinthisregard.

PreventionofNuisanceandPollution

TheAgencyshalltakeallnecessaryprecautionstopreventanynuisanceorinconvenience to the owners, tenants or occupiers of adjacent properties and to thepublic in general and to prevent any damage to such properties and any pollution. Heshall make good at his own cost and to the satisfaction ofthe JDA, any damage toroads, paths, drainage works or public or private property whatsoever caused by theexecutionoftheworkorbytrafficbroughtthereonbytheAgency.Allwasteorsuperfluous materials shall be cleaned away by the Agency without any reservationsentirelytothe satisfaction oftheJDA atno extracost.

The site shall be kept clean of all debris, rubbish and dirt & surplus/waste material all thetime. It also includes maintenance, cleaning & de-silting the pipe lines laid by the agencyfor all internal services etc. executed by the agency to the entire satisfaction of the JDAduring the maintenance periods. Cleaning and de-silting will also be done by the agencybefore handing over the completed structures to JDA. All machines, equipment andlabourforthis purpose willbe arrangedbyAgencyatnoextra costtoJDA.

SecurityoftheSite

The Agency shall be wholly responsible for security of site and works. The Agency shallbe responsible for keeping unauthorized persons off the Site; and Authorized personsshall be limited to the Employees of the Agency, Sub Agency or persons authorized bytheJDA.

Lighting: The contractor shall provide sufficient lighting at project site, of the right typeand at the right place / location for it to be properly effective. Lighting ought not

tointroducetheriskofelectricshock.Therefore,230Vsuppliesshouldbeusedforthose fittings, which are robustly installed, and well out of reach e.g. flood lighting or high-pressure discharge lamps. The contractorshall ensure that luminaries should always beso placed that no person is required to work in their own shadow and that the local lightfor one person is not a source of glare for the others. Strongly made clamps should beavailablefor attachingluminariestopolesand other convenientsupports.

Luminaries shall be robust, resistant to corrosion and rain proof especially at the point ofthe cable entry. The correct type of lamp for each luminary should be used and whenlamps need to be replaced, it shall be in accordance with the supply voltage. Lampholders not fitted with a lamp should be capped off. The contractor shall take every efforttoilluminatethe work site asperthedirection ofJDA.

TrafficManagement:

The basic objective of the following guidelines is to lay down procedures to be adoptedby contractor to ensure the safe and efficient movement of traffic and also to ensure thesafetyofworkmenatconstructionsites.

All construction workers should be provided with high visibility jackets with reflectivetapesasmostofconstructionactivitiesshallbedonewithinright-of-wayoftheroads.The conspicuous of workmen at all times shall be increased so as to protect them fromspeedingvehiculartraffic.

The Agency shall provide safety helmet, safety shoe and high visibility clothing for allemployee including workmen,traffic marshal and other employees who are engaged foranyworkunderthiscontractasperthefollowingrequirement:

All employees of the Agencyincludingworkmen	**Trafficmarshals**
i) Hard hatwith companyLogo	i)Hard hatwithcompanyLogo
ii) Safetyboots	ii)Safetyboots
iii)Hi-visibilitywaistcoatcoveringupper body and meeting thefollowing requirements as perBSEN471:1994:	iii)Hi-visibilityjacketupperbodyandmeeting the following requirements asper BS EN471:1994:
i) Background in florescent orangered incolour.	i) Background in fluorescentorange-redin colour
ii) Two vertical green strips of5cm wide on frontsidecoveringthetorsoatleast5 cm.	ii) Jackets with full-length sleeveswith twobands of retro reflective material, whichshall be placed at the same height onthe garment or those of the torso. Theupper band shall encircle the upper partof the sleeves between the elbow andthe shoulder: the bottom of the lowerband shall not be less than 5 cm fromthebottomofthesleeve.
iii) Two diagonal strips of 5 cmwide on back in an 'X'pattern covering atleast5cm	

iv) Horizontal strips not less than5cm wide running around thebottom of the vertical strip infrontand ‗X' pattern atback. v) The bottom strip shall be at adistance of 5cm from thebottom of thevest.	iii) Twovertical green strips of5cm wideon front side covering the torso at least500 cm iv) Twodiagonalstripsof5cmwideonfrontsidec overingthetorsoatleast500 cm
vi) Stripsmustberetroreflectiveandflu orescent vii) Waistcoat shall have a sideadjustable fit and a side andfront tear away feature onvestsmadeofnylon.	v) Horizontalstraightnotlessthan5cmwide running around the bottom of thevertical strip in front and ‗X' pattern at back. vi) The bottom strip shall be at a distanceof5cmfromthebottomofthe vest. vii) Stripsmustberetroreflectiveandflorescent

Wherever operations undertaken are likely to interface with public traffic, specific trafficmanagement plans shall be drawn up and implemented by the agency in consultationwith the prior approval of local police authorities, and /or the concerned metropolitan/civilauthoritiesasthecasemaybe.

Such traffic management plans shall include provision for traffic diversion and selectionof alternative routes. If necessary, the agency shall carry out road widening beforecommencementofworkstoaccommodatetheextraload.Theagencyshallberesponsible for getting the ―Traffic Management Plan‖approved from Traffic Police beforetaking up anyconstructionactivityon theroad.

The guidingprinciples to be adopted forsafety in construction zone are to Warn theroad user clearly and sufficiently in advance, provide safe and clearly marked lanes forguidingroadusersandmarkedbufferandworkzones.Theagencyshallprovideadequatemeasuresthat controldriverbehaviorthroughconstruction zones.

The primary traffic control devices used in work zones shall include signs, delineators,Barricades, cones, pylons, pavement markings and flashing lights, deployment ofsufficientnumberofMarshalls on diversion roads.

Regulatory signs impose legal restriction on all traffic and they are to be used only afterconsultingthelocal police andtrafficauthorities.

i. Warning signs in the traffic control zone shall be utilized to warn the drivers ofspecific hazardsthatmaybeencountered.

ii. The contractor shall place detour signage at strategic locations and install warningsigns. In order to minimize disruption of access to residences and business, thecontractor shall maintain at least one entrance to a property where multiple entrancesexist.

iii. A warning sign shall be installed on all secondary roads which merges with theprimaryroadwheretheconstructionworkisinprogressatsufficientdistancebeforeitmerges withtheprimaryroadsoastoalerttheroadusersregardingthe ―ConstructionWorkinProgress‖.

iv. Materials hanging over/ protruded from the chassis / body of any vehicle especiallyduring

material handling shall be indicated by red indicator (red light/flag) to indicatethecautiontotheroad users.

Therequirednumberoftrafficguards/marshalsasdecidedbylocalTrafficPolice /JDA shall be provided during construction period so as to ensure safe movement oftraffic without any extra cost to JDA. In case of default, the traffic guards/ marshalsshall be provided by agency and cost of same shall be borne by the Agency inaddition to recovery for violation of tender provisions. No claim whatsoever shall beentertainedonthisaccount

IncidentalWorksSuchasBailing-OutWater,Shoring etc.

For execution of any items of work where incidental works such as bailing out water,shoring etc. are actually required but not specifically stated in the scope of item and/ ortender document, it is to be understood that the contract amount quoted by the agencyshall cover such charges also and nothing extra onaccount of such incidental charges, ifany,shall be paid.

VariousAncillaryProvisionsatSite

Traffic cones of 500mm, 750mm and 1000mm height and 300mm to 500mmin diameteror in square shape at base and are often made of plastic or rubber and normally havingretro-refectoriesredandwhiteband shall beusedwhereverrequired.

Drums about 800mm to 1000mm high and 300mm in diameter can be used either aschannelizing or warning devices. These are highly visible, give the appearance of beingformidableobjectsandthereforecommandtherespectofdrivers.

The barricadingas approved by JDA (or as directed by NGT from time to time)all alongthe periphery of the project site shall be constructed by the Agency with G.I./Galvalumeprofiled sheet with structural steel framework, as per design & drawings, for full length oftheperipheryandaroundconstructionarea.Thebarricadingshallbeaestheticallymaintained by regular cleaning and painting by the Agency as directed by the JDA, costof which is deemed to be included in the rate quoted by the Agency. The structuraldimension of the barricade, material and composition, its colour scheme, JDA logo andother details shall be in accordance with the direction of JDA, for which nothing extra will bepaid totheAgency.

The barricading shall be provided continuously during the execution of the entire work tillcompletion and shall not be removed at any stage without prior approval of the JDA. Allbarricades shall be conspicuously visible in the dark/night time by the road users so thatno vehicle hits the barricade. Conspicuous shall be ensured by affixing retro reflectivestripes of required size and shape at appropriate angle at the bottom and middle portionof the barricade at suitable gap. In addition, minimum one red light or red-light blinkershould be placed at the top of each barricade. The barricading shall include the followingwithout anyextracost:

Traffic signals during construction at site for day and night, reflective signs, directionboards, marking, glow lamps, marking, caution tape, traffic signage as per requirement,flags, Traffic Marshals etc. as directed by the JDA . However, traffic police signals shallnotbetheresponsibility ofthe Agency.

Cleaning of barricading every fifteen days with water and detergent so as to ensure thatthereisno.dirtofsplashesonthebarricading.Thedustaccumulatedalongthebarricadesonthe carriagewayshallbe removed everyweek.

Installationoftemporarywarningsigns/lamps onallbarricades duringthehours ofdarknessandkeptitlitthere atall timesduring thesehours.

Shiftingand re-fixingin position asperthe directionofJDAandall incidentalstoexecute thejobasmany timesas directedbyJDA.

Repaintingofthe barricadingafter regularinterval as directed by JDA and Propermaintenance of the barricading till completion of the work by repairing/replacing thedamagedbarricade.Theyshallbe maintained inoneline and level.

Barricading is also required to be erected by the Agency at his own cost for segregatingtheareaofworkanddeep excavationfromthemovement ofman andmachinery.

Fixing of Lit and Non-lit boards on the barricades of various sizes and design as per thedirectionofJDA andkeptthe boardslitatalltimesduringhoursofdarkness.

The Agency shall ensure the cleanliness of roads and footpaths by deploying propermanpower for the same. The Agency shall have to ensure proper brooming, washing ofroads and footpaths, at all the time, throughout the entire stretch till the currency of thecontractincludingdisposalofsweepingwithoutanyextracost.

ExistingServices&Storage/LabourCampswithinSite.

a) LandforStorage/Labour Camps/RMC

Agency shall manage all activities within the land portion, JDA isnot obliged to make any other land available for Batch Mix Plant, Store, Preserving TopSoil etc.

Agency'scareoftheWorks

The Agency shall bear full riskin and take full responsibility for the care ofthe Worksand Materials, goods and equipment for incorporation therein from the CommencementDate until the Completion Certificate is issued, except and tothe extent that any loss ofor damagetothesameshallariseoutofanydefaultorneglectoftheEmployer.

The Agency shall throughout the execution of the Works including the carrying out of anytesting, commissioning (including Integrated Testing and Commissioning), or remedyingofanydefect;

Take full responsibility forthe adequacy,stability,safety and security ofthe Works,Plant, Goods, Agency's Equipment, Temporary Works, operationson Site and methodsofmanufacture, installation,constructionandtransportation;

Have full regard for the safety of all persons on or in the vicinity of the Site (includingwithout limitation persons to whom access to the Site has been allowed by the Agency),comply with all relevant safety regulations, including provision of safety gear, and in sofar as the Agency is in occupation or otherwise is using areas of the Site, keep the Siteand the Works (so far as the same are not completed and occupied by the Employer) inan orderly state appropriate to the avoidance of injury to all persons and shall keep theEmployer indemnified againstall injuriestosuchpersons.

Provide and maintain all lights, guards, fences and warning signs and watchmen whenand where necessary or required by the JDA or by laws for the protection of the Worksand for the safety and convenience of the public and all persons on or in the vicinity oftheSite;and

Where any work would otherwise be carried out in darkness, ensure that all parts of theSite where work is being carried out are so lighted as to ensure the safety of all personsonorin thevicinityoftheSite andofsuch work.

Agency is required to take note of all the necessary provisions in Employer‘s Safety,Health and Environment Manual (SHE Manual) and the Agency‘s price shall be inclusiveof all the necessary costs to meet the prescribed safety standards. In the case, theAgency fails in the above, the Employer may provide the necessary arrangements andrecover thecosts fromtheAgency.

Housekeeping

Housekeeping is the act of keeping the working environment cleared of all unnecessarywaste, thereby providing a first-line of defense against accidents and injuries. GeneralHouse-keeping shall be carried out by the Agency and ensured at all times at Work Site,Construction Depot, Fabrication Yard, Workshop, Batching Plant, Labour Camp, Stores,Offices and toilets/urinals etc. The Agency shall be responsible to provide segregatedcontainersfordisposalofdebris atrequiredplaces andregularcleaningofthe same.

All stairways, passageways and gangways shall be maintained without any blockages orobstructions.Allemergencyexitspassageways,exitsfiredoors,break-glassalarmpoints, fire-fighting equipment, first aid stations, and other emergency stations shall bekeptclean,un-obstructed andingoodworkingorder.

All surplus earth and debris shall be removed/ disposed-off from the working areasimmediately. Trucks carrying sand, earth and any pulverized materials etc. shall becovered while moving in order to avoid dust or odour impact. The tyres of the trucksleaving the site shall be cleaned with water, wherever the possibility of spillage oncarriageways meantforregularroadtrafficexists.

No parking of trucks/trolleys, cranes and trailers etc. shall be allowed on roads, whichmayobstructthetraffic movement.

Roads shall be kept clear and materials like: pipes, steel, sand boulders, concrete, chipsandbricketc., shall not be allowed on the roadstoobstruct free movementofroadtraffic.

Waterloggingorbentonitespillageon roadsshallnotbeallowed.

Proper and safe stacking of material are of paramount importance at fabrication stores,stores and such locations where material would be unloaded for future use. The storagearea shall be well laid out with easy access and material stored/stacked in an orderly andsafemanner.

Flammablechemicals,compressedgascylindersetc.shallbesafelystored.Unused/surplus cables, steel items and steel scrap lying scattered at different placeswithin the working areas shall be removed to marked locations(s). All wooden scrap,empty wooden cable drums and other combustible packing materials, shall be removedfromthesite.Lumberwithprotrudingnailsshallbeeitherbent/removedandproperly stacked.

The compliance of above provisions are deemed to be included in the quoted amount oftheAgencyandnoclaim/paymentwhatsoevershallbeentertainedonthisaccount.

Safety

Minimum oneSafety Officer/ Manager isrequiredto beatsiteatalltimes.

QualificationsofSafetyCoordinator/Managershouldnotbelessthanthoseprescribedin local regulation in building and other construction workers (regulation ofemployment&conditionsofservice)centralRules,1998.

Agency shall arrange for initial Site orientation / induction of all Workmen / Supervisingpersonnel on Safety practices' before beginning of work at site. This shall include a briefingaboutproject,safetypolicy,site safetyrules andsitefacilities.

Agency shallconductadailytoolboxtalkfor allworkerspreviustostartingtowork.

These tool box talks should include topics related to ongoing work activities andprecautionstobetakenon dailyactivities.

Agencyshallensureparticipationofhissitein-chargeandthesafetycoordinatorinthesafety meetingsarrangedatintervalsdecided by theJDA.

AgencyshallalsosubmitaHealth&Safetyreportonmonthlybasisorasdirectedto JDA.

Agency'sSafetyEngineer/SafetyOfficersshall:

AssisttheAgency'sConstructionManagerandcoordinatewithconsultant'sSafetySupervisorfortheimplementationoftheHSEprogramwithincorrespondingworkgroups.

Getfamiliarizedwithallgovernment,andOwner'ssafetyandhealthregulations,includingreportsandworkpermitsprocedures.

InspecttheconstructionareaonaregularbasisinordertoverifyappropriatecorrectiveactionsandpreparereportstotheirconstructionManager.

ReviewtheSAP(SafetyActionPlan) prepared bylinesupervisor.

Co-ordinatewithsupervisorsandforemenperiodicalsafetymeetingsandleaddailysafetymeetings.

Conduct safety training classes for all workers.ParticipateinTool BoxTalks.

Suggestsafety promotionalactivities.

Informationto BeProvided By Agency

i) Health,SafetyandEnvironment policy
ii) AdetailedHealth,SafetyandEnvironment plan.
iii) NamesoftheSafety personnel.
iv) Employers'liabilityinsurancepolicy.
v) Workmethodstatementsforcriticaloperationssuchasliftingetc.
vi) TestCertificatesforliftinggear,liftingequipmentandaccessories.
vii) InformationrelatedtohazardousmaterialsusedandcorrespondingMSDS(Materials SafetyData Sheets).
viii) Dailylabourreturns
ix) CopiesofallStatutoryRecords.
x) CopiesoftheAgencySafety's reports
xi) Supervisor'sreportsofhisfindingson-siteinspections.
xii) Covid-19policy.

Initialsiteorientation/induction

The number of orientation sessions presented each week will vary to the greatest extentpossibleinorderto accommodatetheAgency'sneeds tobring labour onsite.

Thefollowingtopicsshallbeincludedduringsuchpresentations,whichwillchangeduringthecourse oftheproject tomeetchangingsiterequirements:

i) Introductiontothesiteandproject,withabriefoverviewoftheprojectunderconstructions.
ii) Ownerandconsultant'sHSEpolicyandsafetyphilosophy.

iii) PersonalProtectiveEquipment(hardhats,safetyglasses, safetysteel-toedboots)
iv) Housekeeping
v) Workinginandaroundexcavations
vi) Working at height(ladders,scaffolds,freeedgesandopenings)
vii) TheSafetyActionPlan(SPA)
viii) First aidfacilities,Accidentreportingsystem
ix) Emergencyprocedure
x) Smokingrestrictions,prohibitionofalcoholanddrugs.
xi) The Agency will conduct a site visit for his new employees in groups of less than 25so that they get acquainted with essential services, their workplace, and generalsite layout.
xii) Gatepasswillbeissuedonlyafter completionofthesiteorientation/induction.

Personal ProtectiveEquipments(PPEs)

The Agency shall provide required PPEs to workmen to protect against safety and/orhealthhazards. PrimarilyPPEsarerequired forthefollowingprotection.

i) HeadProtection(Safetyhelmets)
ii) FootProtection(Safetyfootwear,Gumbootetc.)
iii) BodyProtection(Highvisibilityclothing(waistcoat/jacket,Apronetc.)
iv) Personalfall protection (Fullbodyharness,Rope-grapfallarrester etc.)
v) Eyeprotection(Goggles,Weldersglasses etc)
vi) Handprotection(Gloves,fingercoatsetc.)
vii) RespiratoryProtection(Nosemask,SCBAsetc.)
viii) Hearingprotection(Earplugs,Earmuffs etc)

The PPEs and safety appliances provided by the Agency shall be of the standardas prescribedbyBureauofIndianStandards(BIS).IfmaterialsconformingtoBISstandards are not available, the Agency shall procure PPE and safety appliances, asapprovedbythe JDA.

Safety Helmet ColourCode	**Person touse**
White	JDA/JDAstaff
Grey	Alldesigners,Architect,Consultantsetc.
Violet	MainAgencies(Engineers/Supervisors)
Blue	AllSub-Agencies(Engineers/Supervisors)
Red	Electricians(bothAgencyandsub-Agency)
Green	SafetyProfessionals(BothAgencyandsubAgencies)
Orange	SecurityGuards/TrafficMarshals
Yellow	Allworkmen
White(with -Visitor‖ sticker)	Visitors

***(EveryHelmet shouldhavetheLOGOaffixed/painted).**

All construction workers should be provided with high visibility jackets withreflective tapes confirming to the requirement specified under BS EN 471:1994. The conspicuous of workmen at all times shall be increased so as toprotectthemfromspeeding vehiculartraffic.

InadditiontotheabovePPEforanyspecificjobslike, weldingandcutting,workingatheight,tunnelingetc.shallalsobeprovided to all workmen and also ensure that all workmen use the PPEsproperly while on the job. The Agency shall not pay any cash amount in lieu toPPE to the workers/sub- Agencies and expect them to buy and use duringwork.

The Agency shall at all-time maintain a minimum of 10% spare PPEs andsafetyappliancesandproperlyrecordandshowtotheJDAduringtheinspections. It is alwaysthe duty ofthe Agency to provide required PPEs forall visitors & JDA staff. Towards this required quantity of PPEs shall be keptalways atthesecurity post.

Not with standing the above, the Agency shall at their expense arrange for thesafety provision as per all relevant Indian Standard Safety Codes & local bye-laws. The Agency shall provide all facilities in connection therewith and shallalsoissue theidentitycardto hislabourer.

SanitationandHygiene Measures

In order to provide adequate sanitary conditions for all personnel at site, thefollowing provisions as a part of the temporary facilities to be provided by theAgency:

i) Provisionforanadequatesupplyofpotablewater
ii) Provisionfortoilets andhandwashbasins
iii) Garbagedisposalandregularcollection
iv) Properdrainageandsewerdisposal
v) Otherspecialhygienic operationsviz.Fumigation,pestcontrols etc.
vi) Worker'sRestSpace:
vii) Smokinghut
viii) Sunshadeand/or site canteen

Smoking on site is not allowed, « No smoking« signs shall be displayed atprominentlocation includingstores/storage places.

Workatheights

During construction of buildings/towers safety net (horizontal and vertical) shall beused by Agency to check/control falling of any object. The Agency/vendor shall alsotaketheothersafetymeasuresusedduringconstruction,fore.g.PersonalProtective Equipments(PPEs),safetyduring workingatheights etc.

The Agency shall provide proper scaffolding and working platforms with handrails towork at higher elevations and Tools and loose material should not be left on thescaffolding from where they are likely to fall. Persons should use safety belts whileworkingnearopenedgewhere itis notpossibleto providehandrails.

Things should not be thrown from heights and should be brought down or taken upwith the help of ropes. While work is being carried on at higher elevations, warningnotices should be posted below or barricade the area so as to draw the attention ofpersons andprevent themfrom comingunderthefalling objects.

Defective scaffoldings, damaged ladders, insufficient working platforms etc. shall notbe permitted. Wherever necessary, light weight mobile tower scaffolds or hydraulicplatformsshould beused.

Proper access should be available to the work spot. Nobody should jump over openarea between equipment, pipes and rails etc. from where they may slip. Walkingover beams,narrowpipesetc.should beprohibited.

The area from where the materials are pulled up with ropes etc. should have handrailings and the person should keep firm footing. They should not lean over thehandrails and should use safety belts to protect themselves from fall due to bodyimbalance.

TheAgencyshouldreducethehazardsassociatedwithfallsfirstthroughengineering controls and Have a formal fall protection program in accordance withFactories Act requirements. Agency should Institute personal fall arrest systems,administrativecontrols andtraining whenengineeringcontrols arenotfeasible.

The Agency shall have the necessary fall protection equipment to safely perform thejobandproperlytrainworkersintheuseoffallprotectionequipmentandsupervisors(orcompetentpersonnel)shallensure theuseoffallprotection equipment as required. Agency shall obtain work permit from the Consultant prior to starting of activities requiring fall protection.

Should Use powered access safely and Protect holes and leading edges, e.g. with hand rails and to boards.

The construction waste from the height should be transferred through closed chutes.

All other measures to be taken for the safety at project shall be ensured by the Agency.

It shall be deemed that rates quoted by the Agency are inclusive of all the expenditures incurred in the safety procedures. No extra payment on this account shall be payable to Agency.

Unforeseeable Difficulties

Except as otherwise specifically stated elsewhere in the Contract:

The Agency shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Works;

By signing the Contract, the Agency accepts total responsibility for having fore seen all difficulties and costs of successfully completing the Works; and The Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs.

JDA shall not provide any material either on chargeable or on free issue basis to the Agency for execution of the project.

SECTION XII
Schedule of Stage Payment

15. ScheduleofStagePayments

PAYMENT–SCHEDULE

Allrunning/intermediate&finalpaymentsshallbemadetotheagencyinaccordancewiththefollowingschedule:

S.No.	Activity	Percentage of Total Quoted Amount	Total payable(%)of PART-I
A	Investigation,Architecturalplanning,Designingandobtainingnecessarypermissionsetc.forentirescopeofwork (3%ofTotalQuoted Amount)	3 %	
	1)Onapprovalofinceptionreport&Sitesurvey, Geo- technical investigation andpreparationofpreliminaryArchitectural Drawings, Presentations, conceptual plan and themes.		0.4
	2)Onobtainingapprovalof JDA /local authorities on detailedandworkingdrawingsofcompletecomplexincludinginfrastructure,facilities&servicesasper Scopeofwork.		0.15
	3)OnapprovalofstructuredesignbyJDA& SuccessfulstructuralvettingfromNITorIITs.		0.3
	4) On obtaining other approvals like: TreeCuttingNOC,TrafficNOC,environmentalclearanceifrequired,PHED and Electrical Department NOC;etcasrequiredforthestartingthe Project.		0.15
	5) Onestablishing site office, testing laboratoryetc.		0.15
	6)After completion of 50 % work of totaltenderedCostforarrangingvariousactivities,meetings/conferences/visits /etc.		0.2
	7)After completion of 100 % work as perscope of work of total tendered Cost forarrangingvariousactivities,meetings/ conferences/visits/etc.		0.15
	8)OnobtainingFireNOC, PHEDandElectricalDepartment NOC,completion certificateetc. Aftercompletionof work.		1.5

B	CompletionofFoundation workasper scopeofwork	15% ofProject Cost	
	a)Foundation: Raft		
	1)Footings/columns/waterproofing- 50%ofthe workfor Foundation		6.00
	2) Footings/columns/waterproofing- 100%oftheworkforbasement.		6.00
	3)Completion of Plinth Beam and Backfilling		3.0
C	SuperStructurework(G+1structure)of inall respectasperscopeofwork	55 % of Project Cost	
	1)CompletionofCivilStructuralWork		
	GroundFloorroof Slab Level		6.0
	IstFloorroof Level		6.0
	(TerraceFloor)		2.60
	ii)CompletionofExternaland Internal Partitionwalls etc.		
	GroundFloorroofLevel		1.10
	IstFloorroof Level		1.10
	(TerraceFloor)		0.6
	iii) Internal Plaster including electrical conducting,plumbingandsanitarypipes installation		
	GroundFloorroofLevel		1.50
	IstFloorroof Level		1.50
	(TerraceFloor)		0.3
	iv)CompletionofFlooring,skirting,tileworks doors &windowsframes etc		
	GroundFloorroofLevel		1.5
	IstFloorroof Level		1.5
	(TerraceFloor)		0.5
	v) Completion of Door, windows, andotherfinishingworksetcincludingPOP, Waterproofing,Falseceiling painting etc.-		
	GroundFloorroofLevel		2.5
	IstFloorroof Level		2.5
	(TerraceFloor)		1.0
	vi)Completionofkitchens, Laundary, Staff Quarters installationofsanitaryandCPfittings,intern alelectrification etc.		

	GroundFloorroofLevel		1.80
	IstFloorroof Level		1.80
	(TerraceFloor)		0.70
	vii) Complete Installation of Air conditioningwork, mechanical ventilation work, FireFightingsystem,firealarm,smokedetection, security system,electrificationsystem,solarsystem,oxygengaspipeline,ACunits,ROs,Geysers, water supply, sanitary, lighting,earthlingetc.includingtestingand commissioning		15.50
	viii)OncompletionToilet Blocks		5.0
D	Completion of Site Development works including siteservices	20 % ofProject Cost	
	1)CompletionofBoundaryWall,GuardRooms, M.S.Grilletc.includingplastering,painting,claddingandfinishes etc.		2.50
	2)Completionofwater-supplysystemand seweragesystem		5.0
	3)CompletionofDrainagesystem&Rain WaterHarvestingincludingrechargewell& TubeWells.		1.50
	4)Paving,InternalRoads,Pathways,Lawns, Marking, painting of Kerb stone,bermcleaning,connectivityofentrypointswithexternalroadnetwork Completein all respect.		3.0
	6)CompletionofserviceconnectionofWatersupply,SewerageandDrainage etc.		0.50
	7) AllElectrical Works including Sub Station,DGSetsetc.completeasperthescopeofworkcomplete.		
	a) SupplyofEquipments/ parts		0.50
	b) Installation,Testing&Commissioning		0.50
	8)ExternalElectrificationworks:StreetLighting, withLEDLights andsign Boards		2.0

	9) Designing & Installing & commissioning ofCCTV Cameras covering all entry& exitpointsofeachbuildings and main gates with adequatedisplay ofcameras on LED screens incontrolrooms,includingcontrolrooms,displaysystemandsoftwaresupportsystemandrequireddatacablingetc.complete.		1.25
	10)CompletionofCWRwithpump Room, pumping, watersupplysystem.		1.25
	11) Installation of Lifts		2.50
E	CompletionofallHorticultureinall respectasperscopeofwork	2.0%of Project Cost	
	1)Completesupply,installation,testingoftheirrigationsystemforHorticulture works,fountainsetc.		0.40
	2) Completion of 100% work oflandscaping& other horticulture work such asfillingofgoodearth,grassing,planters, decorativeplants,treeplantationetc.		
	2.1)Completionof50%oftotalscopeof Work		0.80
	2.2)Completionof100%oftotalscopeof Work		0.80
F	Oncompletion,installation,checking,andmakingcompletebuildingfunctionalinall Respect.	5.00 % ofProject Cost	5.00%
	TOTAL	**100 %**	**100 %**

NOTE:- 1) Any variations in drawings and designs during construction for the betterment of the project with variations upto 2% of the contract value no additional cost shall be payable. The assessment of additional work shall be based on JDA BSR 2016 and market rates as mutually agreed.

2) In case of execution of any additional work if required to be executed for the betterment of the project, the payment of the same shall be made with mutual agreement after proper assessment of rates based on JDA BSR 2016 and market rates.

3) No Mobilization advance is payable in this contract.

4) Price variation is not payable in this contract.

5) The payment will be done on completion of various stages but running payment may also be done on partial completion of the stage.

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 postponed until 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.

. 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.

Taking Over

"The Employer shall take over the whole works or section of works within Seven (7) days of issuance of Completion Certificate, as per Clause no 52.1 and 52.2."

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.

. 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.

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.

. 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.

. 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.

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.

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.

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

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.

Fossils

The Contractor shall make his staff available for briefing on archaeological matters as directed by the Engineer.

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.

Fair Wages

1.1 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.)

1.2 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.

1.3 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.

1.4 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.

1.5 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.

1.6 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.

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.

Protective Clothing and Footwear

1.1 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.

1.2 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;

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.

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.

. 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.

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.

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.

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.

Site Office

40.1 Within 15 (Fifteen) days from the date of commencement of the work, the Contractor shall arrange to provide a furnished and adequately equipped site office. This shall be removed at the completion of the work..

Pre-Construction Inspection, Testing & Review of Data for Materials, Plant & Equipment

1.1 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.

1.2 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.

1.3 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.

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 Engineer In-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 take 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

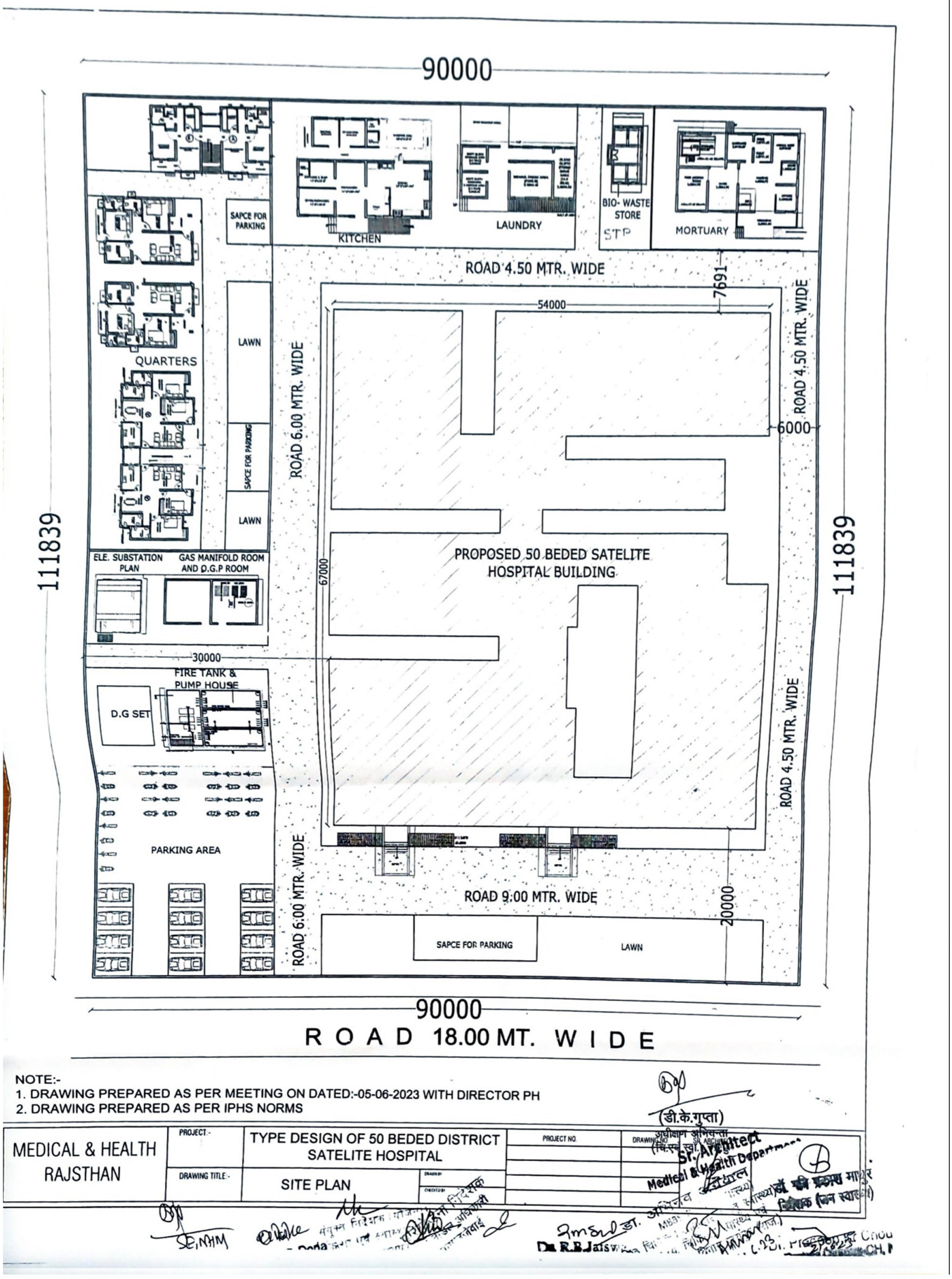
construction period recommended by the Engineer In-charge shall be resolved in accordance with the Dispute Resolution Procedure.

SECTION XIII
DRAWINGS
(These conceptual drawings are only for indicative purpose)

VOLUME II

FINANCIAL BID

Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur



NOTE:-
1. DRAWING PREPARED AS PER MEETING ON DATED:-05-06-2023 WITH DIRECTOR PH
2. DRAWING PREPARED AS PER IPHS NORMS

(डी.के.गुप्ता)
अधीक्षण अभियन्ता (वि.एवं य.)
Sr. Architect
Medical & Health Department

MEDICAL & HEALTH RAJSTHAN	PROJECT:-	TYPE DESIGN OF 50 BEDED DISTRICT SATELITE HOSPITAL	PROJECT NO.	DRAWING NO.	
	DRAWING TITLE:-	SITE PLAN	DRAWN BY	CHECKED BY	

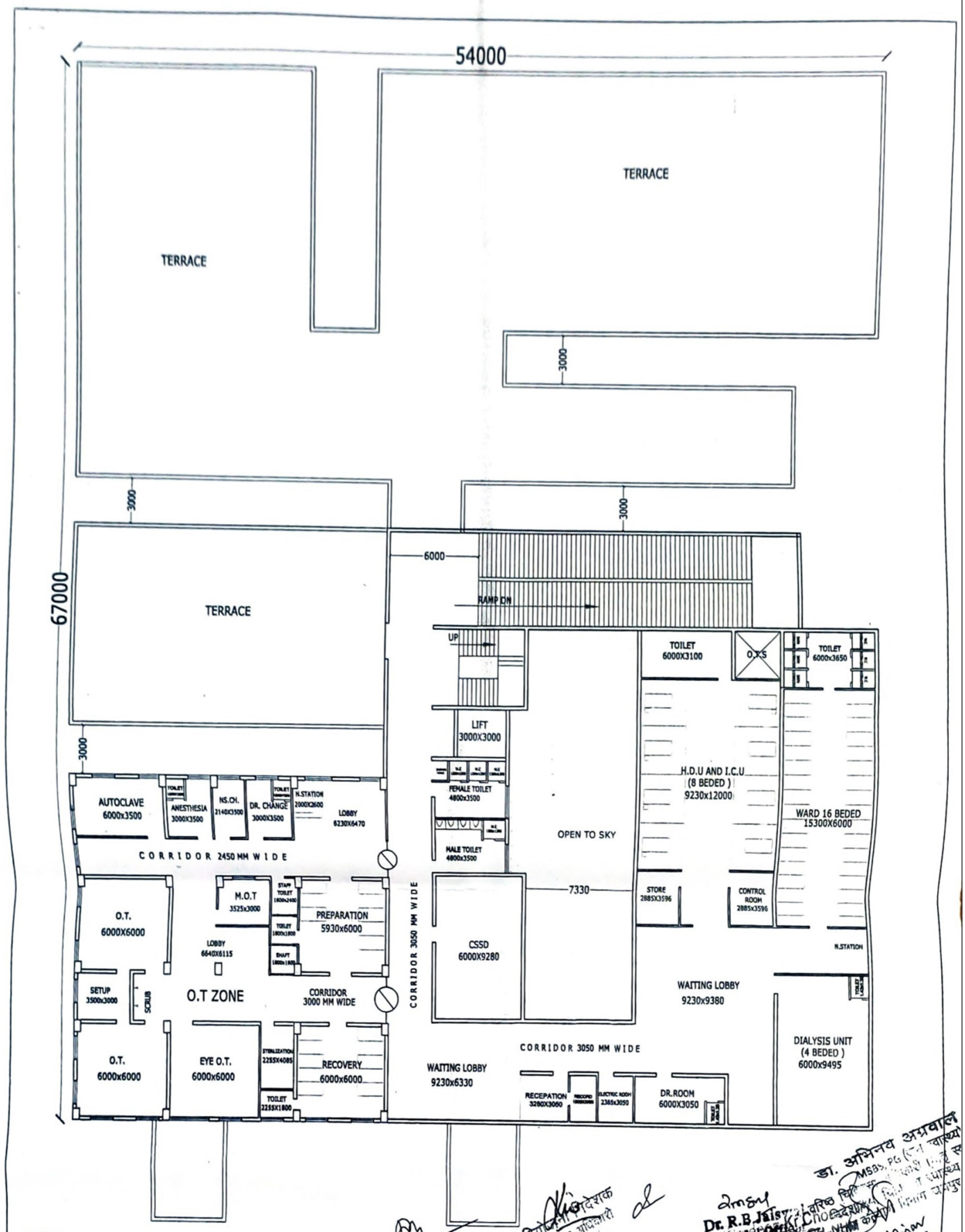
SE/MHM

Dr R.B.Jais

NOTE:-
1. DRAWING PREPARED AS PER MEETING ON DATED:-05-06-2023 WITH DIRECTOR PH (डी.के.गुप्ता) अधीक्षण अभियन्ता (चि.एवं स्वा.) जयपुर
2. DRAWING PREPARED AS PER IPHS NORMS

TOTAL FLOOR PLAN (G+1)
BUILT-UP AREA :-4357.69 SQ.MTR.
GROUND FLOOR PLAN
BUILT-UP AREA :-3003.84 SQ.MTR.

MEDICAL & HEALTH RAJSTHAN	PROJECT :-	TYPE DESIGN OF 50 BEDED DISTRICT SATELITE HOSPITAL	PROJECT NO.	DRAWING NO.
	DRAWING TITLE :-	GROUND FLOOR PLAN		

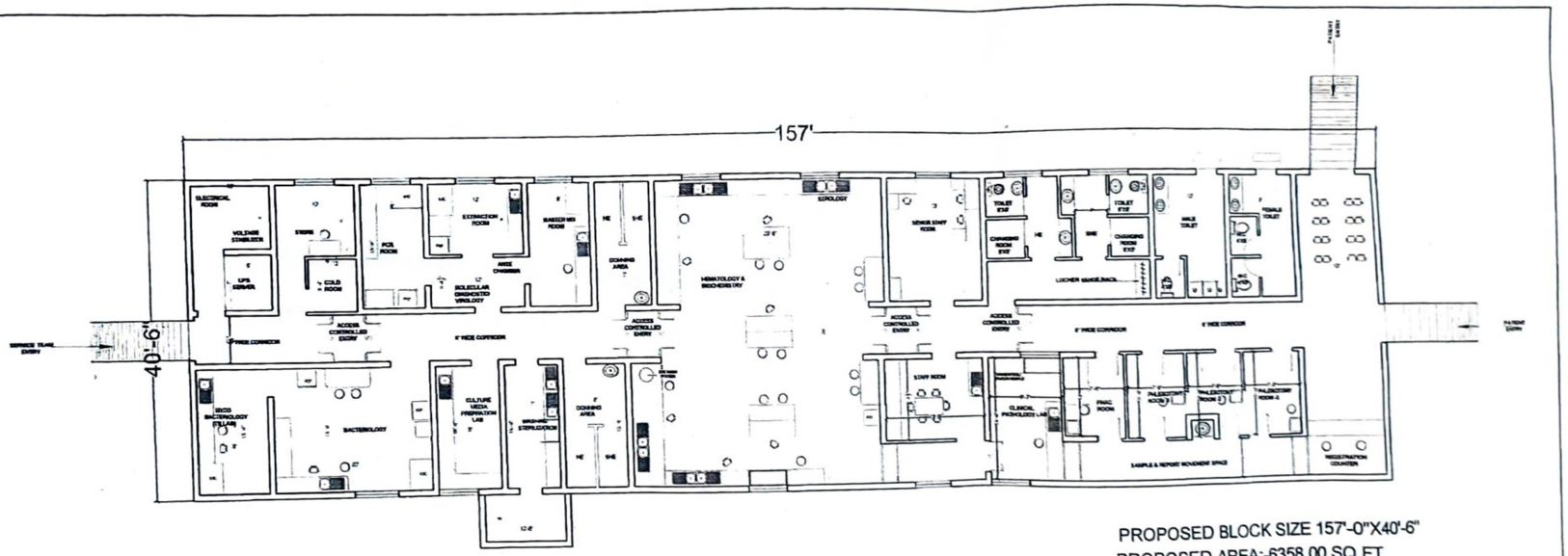


NOTE:-
1. DRAWING PREPARED AS PER MEETING ON DATED:-05-06-2023 WITH DIRECTOR DR.H.L.P. Dorla
2. DRAWING PREPARED AS PER IPHS NORMS

Director (RCH)

FIRST FLOOR PLAN
BUILT-UP AREA :-1353.85 SQ.MTR.

MEDICAL & HEALTH RAJSTHAN	PROJECT:-	TYPE DESIGN OF 50 BEDED DISTRICT SATELITE HOSPITAL	PROJECT NO.	DRAWING NO.	SR. ARCHITECT	डॉ. अमिनव अग्रवाल निदेशक (जन स्वास्थ्य)
	DRAWING TITLE:-	FIRST FLOOR PLAN	DRAWN BY	CHECKED BY		



PROPOSED BLOCK SIZE 157'-0"X40'-6"
PROPOSED AREA:-6358.00 SQ.FT.

Medical & Health Rajasthan	Project:	INTEGRATED PUBLIC HEALTH LABORATORIES		Revision No	Date	Sr. Architect
	Drawing	LAYOUT PLAN	drawn by:			

Dr. K. L. Meena
Director (RCH)

डॉ. वी.के. माथुर
निदेशक (जन स्वास्थ्य)

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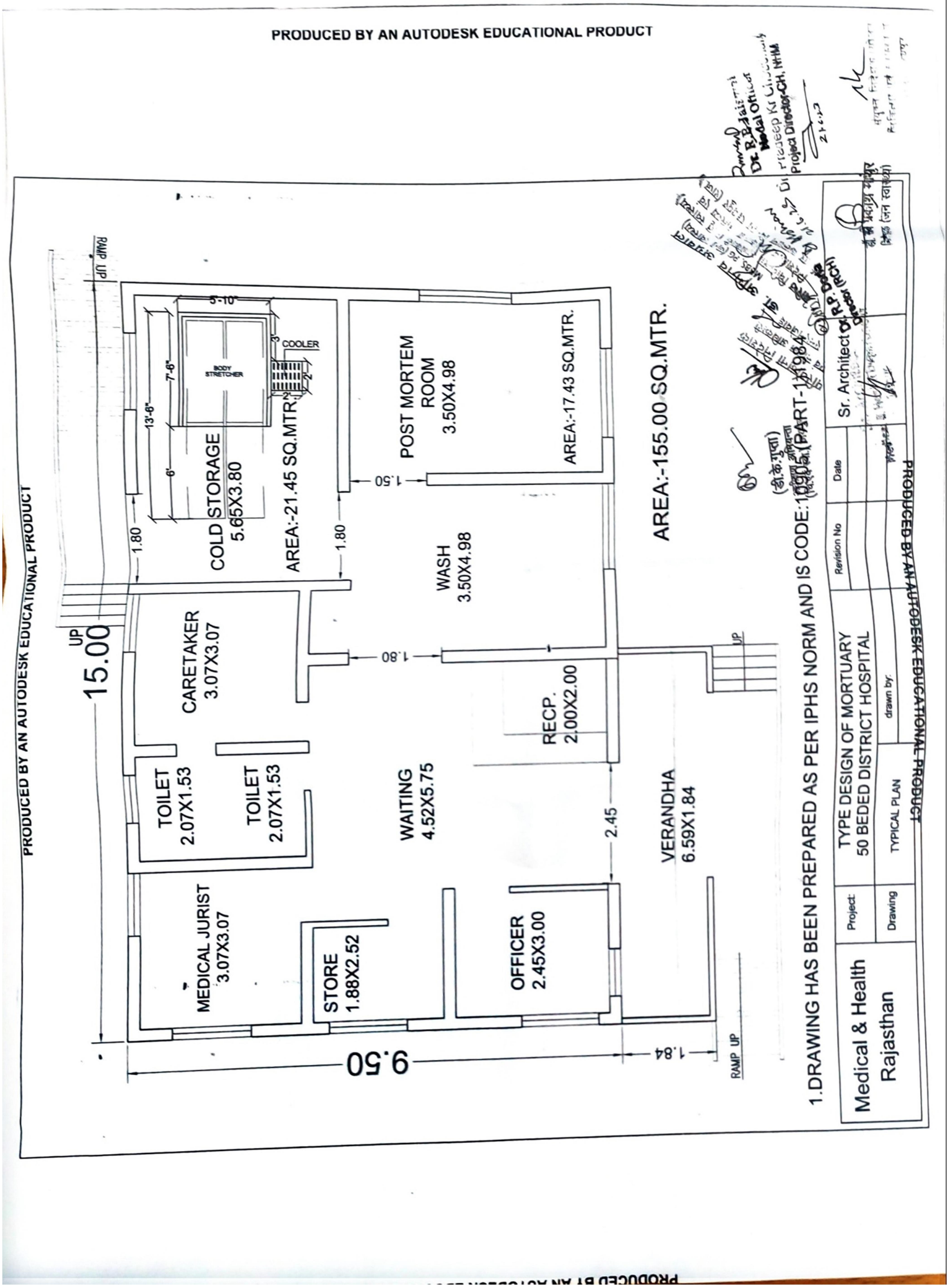
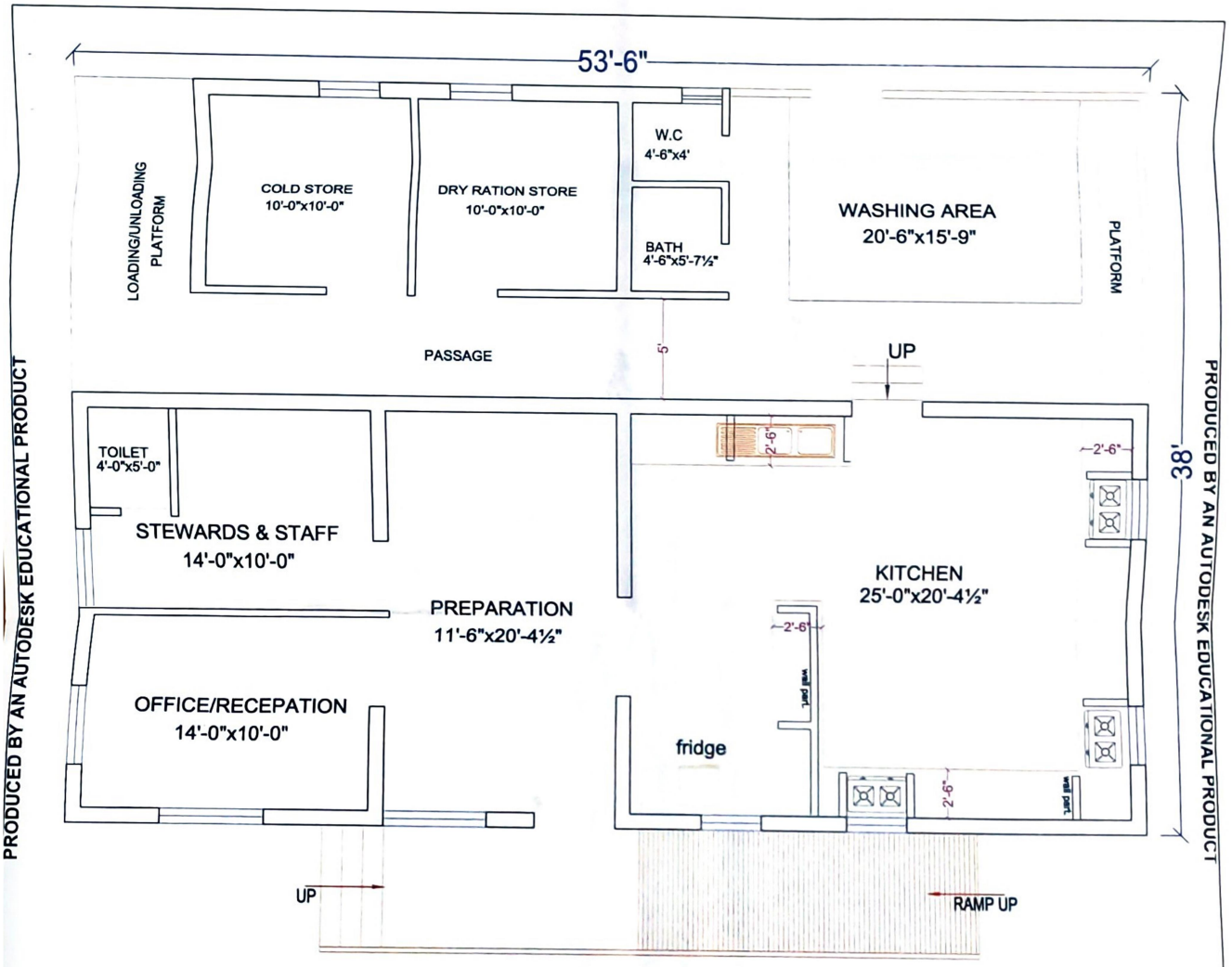
C:\Users\Dell\Desktop\MEETING 20-04-2022\INTEGRATED PUBLIC HEALTH LAB.dwg, 20-04-2022 15:15:25, Xerox WorkCe

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
RAMP UP
UP
15.00
1.80
COLD STORAGE
5.65X3.80
AREA:-21.45 SQ.MTR.
5'-10"
13'-6"
7'-6"
6'
BODY STRETCHER
3'
COOLER
2'
POST MORTEM
ROOM
3.50X4.98
AREA:-17.43 SQ.MTR.
1.50
1.80
WASH
3.50X4.98
AREA:-155.00 SQ.MTR.
CARETAKER
3.07X3.07
TOILET
2.07X1.53
TOILET
2.07X1.53
1.80
RECP.
2.00X2.00
UP
WAITING
4.52X5.75
MEDICAL JURIST
3.07X3.07
STORE
1.88X2.52
OFFICER
2.45X3.00
2.45
VERANDHA
6.59X1.84
9.50
1.84
RAMP UP
1.DRAWING HAS BEEN PREPARED AS PER IPHS NORM AND IS CODE:1090(PART-1)1984
Medical & Health
Rajasthan
Project:
TYPE DESIGN OF MORTUARY
50 BEDED DISTRICT HOSPITAL
Drawing
TYPICAL PLAN
drawn by:
Revision No
Date
Sr. Architect
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT


PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
COLD STORAGE
5.65X3.80
AREA:-21.45 SQ.MTR.
BODY STRETCHER
COOLER
POST MORTEM
ROOM
3.50X4.98
AREA:-17.43 SQ.MTR.
WASH
3.50X4.98
CARETAKER
3.07X3.07
TOILET
2.07X1.53
TOILET
2.07X1.53
WAITING
4.52X5.75
RECP.
2.00X2.00
MEDICAL JURIST
3.07X3.07
STORE
1.88X2.52
OFFICER
2.45X3.00
VERANDHA
6.59X1.84
15.00
9.50
1.80
1.50
2.45
1.84
RAMP UP
UP
AREA:-155.00 SQ.MTR.
1.DRAWING HAS BEEN PREPARED AS PER IPHS NORM AND IS CODE:10905 (PART-1)-1984
Medical & Health
Rajasthan
Project:
TYPE DESIGN OF MORTUARY
50 BEDED DISTRICT HOSPITAL
Drawing
TYPICAL PLAN
drawn by:
Revision No
Date
Sr. Architect
Project Director CH, NHM
Director (RCH)



AREA:-1777.00 SQ. FT.

1.DRAWING HAS BEEN PREPARED AS PER IPHS NORM AND IS CODE:10905 (PART-1)1984

Medical & Health Rajasthan	Project:	TYPE DESIGN OF KITCHEN 50 BEDED DISTRICT HOSPITAL	Revision No	Date	Sr. Architect	
	Drawing	TYPICAL PLAN	drawn by:			

(डी.के.गुप्ता)
अधीक्षण अभियन्ता
(चि.एवं स्वा.) जयपुर

Dr. R.P. Dorla
Director (RCH)

Dr. R.B.Jaiswal
Nodal Officer

Dr. Pradeep
Project Director-C

21.6.23

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: JAIPUR DEVELOPMENT AUTHORITY, JAIPUR

Name of Work: Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur

Contract No: EE-11/06/2023-24

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 To be entered by the Bidder Rs. P	TOTAL AMOUNT With Taxes	TOTAL AMOUNT In Words
1	2	3	4	5	6	7
1	Construction of 50 bedded Satellite Hospital at of Balmukundpura (Ajmer Road) Zone 11, JDA, Jaipur **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.**	1.000	Each		**0.00**	**INR Zero Only**
Total in Figures					**0.00**	**INR Zero Only**
Quoted Rate in Words				**INR Zero Only**		