राजस्थान केन्द्रीय विश्वविद्यालय

Central University of Rajasthan

NH-8, Bandarsindri, Kishangarh-305817, Ajmer(Raj.)

(CGPA-3.54)

NIT No. CURAJ/R/F.180/2026/7608 Date: 25.11.2026

NAME OF WORK	**:**	Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.
ESTIMATED COST	**:**	**Rs. 2,35,06,014.68 /- (Including GST)**
EARNEST MONEY	**:**	**Rs. 4,70,120/-**
TIME ALLOWED	**:**	**03 (Three) Months**
DATE OF UPLOADING	**:**	**25.11.2026 at 2:00PM**
Pre –Bid Meeting		**02.12.2026 at 11:30 AM**
LAST DATE OF SUBMISSION OF BID	**:**	**16.12.2026 at 2:00PM**
DATE OF OPENING OF TECHNICAL BID	**:**	**1712.2026 at 3:00PM**
DATE OF OPENING OF FINANCIAL BID	**:**	**To be intimated separately**

INDEX

Name of Work: - Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

S. NO.	DESCRIPTION	PAGE NO.
1.	INDEX	2
2.	TENDER NOTICE	3
	PART-A	
3.	CPWD–6 FOR E-TENDERING	5-10
4.	FORM A, B, C, D, E& F	11-16
5.	INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR E-TENDERING	17-19
6.	PART-A, VOLUME II	20
7.	CPWD FORM NO. 7	21
8.	SCHEDULES (A TO F) FOR CIVIL WORK	24-34
9.	SCOPE OF WORK	35
10.	FORM OF BANK GUARANTEE	36
	PART-B	
11.	SPECIAL CONDITIONS (CIVIL)	40-61
12.	PARTICULAR SPECIFICATIONS (CIVIL)	62-85
13.	PERFORMA OF TEST CARRIED OUT, CEMENT / PAINT REGISTER,	86-88
14.	ANNEXURE - I , LIST OF PREFERRED MAKES FOR CIVIL WORKS	89-94
15.	ANNEXURE - I , LIST OF PREFERRED MAKES FOR ELECTRICALS WORKS	95-97
	PART-C	
16.	SCHEDULE OF QUANTITY FOR ALL WORKS	98-110
17.	CONCEPTUAL DRAWING	111
18.	GCC CONSTRUCTION WORKS 2023	-

Certified that this NIT No. CURAJ/R/F.180/2026/7608 Date: 25.11.2026 amounting to Rs. 2,35,06,014.68 /- contains 1 – 111 pages and GCC 2023.

Registrar
Central University of Rajasthan

TENDER NOTICE

CENTRAL UNIVERSITY OF RAJASTHAN
NOTICE INVITING E-TENDER

Central University of Rajasthan, NH-8, Bandarsindri, Kishangarh, Ajmer (Raj.) (Tel.No. ……& E-mail ID: registrar@curaj.ac.in) invites **online Percentage Rate Bids from eligible contractors** in two bid system for the following work:

N.I.T. No.: CURAJ/R/F.180/2026/7608 Date: 25.11.2026

Name of Work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan. Estimated Cost: **Rs. 2,35,06,014.68 /- (including GST)**

Earnest Money: **Rs. 4,70,120/-**

Construction Time Allowed: 03 Months

Last date & time of submission of tender: 16.12.2026 at 02:00 PM

Last date & time of opening of technical bid of tender: 17.12.2026 at 03:00 PM

The tender from and other details can be obtained from the website https://eprocure.gov.in and www.curaj.ac.in.

Registrar
Central University of Rajasthan

BID DOCUMENT
PART-A

Name of work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

CPWD–6 FOR e-TENDERING

1. Central University of Rajasthan, NH-8, Bandarsindri, Kishangarh, Ajmer (Raj.) (Tel.No. 01463-257507 & E-mail ID: registrar@curaj.ac.in) invites online Percentage Rate Bids from eligible contractors in two bid system for the following work:

Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

The work is estimated to cost **Rs. 2,35,06,014.68 /- including GST** This estimate, however, is given merely as a rough guide.

1.1.1. The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the bids. He will also nominate Section which will deal with all matters relating to the bids. For composite bid, besides indicating the combined estimated cost put to bid, should clearly indicate the estimated cost of each component separately. The eligibility of bidders will correspond to the combined estimated cost of different components put to bid.

2. Agreement shall be drawn with the successful bidder on prescribed Form No. CPWD-7 amended up to date which is available as a Govt. of India Publication and sample also available on website www.cpwd.gov.in. Bidder shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.

3. The time allowed for carrying out the work will be **03 (Three) Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.

4. The site for the work is available.

5. The architectural and structural drawings shall be made available in phased manner, as per requirement of the same as per approved program of completion submitted by the contractor after award of work. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen on website www.cpwd.gov.in.

6. After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.

7. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified.

8. Earnest Money of **Rs. 4,70,120/-**in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks (drawn in favour **of Central University of Rajasthan)** shall be scanned and uploaded on the e-Tendering website within the period of bid submission. The original EMD should be deposited either in the office of Registrar inviting bids or Executive Engineer office, CURAJ within the period of bid submission.

   The earnest money given by all the tenderers except the lowest tenderer shall be refunded immediately after the expiry of stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier. However, in case of two/ three bid system, earnest money deposit of bidders unsuccessful during technical bid evaluation etc. should be returned within 30 days of declaration of result of technical bid evaluation.

   Copy of certificate of work experience and other documents as specified in the notice inviting e- tender shall be scanned and uploaded on the e-Tendering website within the period of bid submission.

9. The bid submitted shall become invalid and e-Tender processing fee shall not be refunded if:
   (i) The bidder is found ineligible.
   (ii) The bidder does not upload scanned copies of all the documents stipulated in the bid document.
   (iii) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest bidder in the office of bid opening authority.
   (iv) If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above / below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

10. The contractor whose bid is accepted will be required to furnish performance guarantee at specified percentage of the tendered amount as mentioned in schedule E and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F', including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee. The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/ registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW

Welfare Board including Provident Fund Code No. If applicable and also ensure the compliance of aforesaid provisions by the subcontractors, if any engaged by the contractor for the said work within the period specified in Schedule F.

11. **The description of the work is as follows:**

Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

12. The competent authority on behalf of the Central University of Rajasthan does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders, shall be summarily rejected.

13. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.

14. The competent authority on behalf of Central University of Rajasthan reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.

15. University reserving the right to cancel the tender at any time without giving the reason.

16. No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his

retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India, as aforesaid, before submission of the bid or engagement in the contractor's service.

17. The **bids** for the **work** shall remain open for acceptance for a period of **180 (One Eighty Days) d**ays from the date of opening of bids.

(i) If any tenderer withdraws his tender or makes any modifications in the terms & conditions of the tender which is not acceptable to the department within 7 days **after last date of submission of bids,** then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the earnest money absolutely **irrespective of letter of acceptance for the work is issued or not.**

(ii) If any tenderer withdraws his tender or makes any modifications in the terms & conditions of the tender which is not acceptable to the department **after** expiry of 7 days **after last date of submission of bids,** then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit **100%** of the earnest money absolutely **irrespective of letter of acceptance for the work is issued or not.**

(iii) **In case of forfeiture of earnest money as prescribed in para (i) and (ii) above,** the bidders shall not be allowed to participate in the rebidding process of the **same** work.

18. This Notice Inviting bid shall form a part of the contract document. The successful bidder/contractor, on acceptance of his bid by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of: -

(a) The Notice Inviting bid, all the documents including additional conditions, specifications and drawings, if any, forming the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.

(b) Standard CPWD Form-7 or other Standard CPWD Form as applicable.

19. **For Composite Bids**

19.1 The cost of bid document and Earnest Money will be fixed with respect to the combined estimated cost put to tender for the composite bid.

19.2 The bid document will include following three components:

Part A. CPWD-6, CPWD-7 including schedule A to F for the major component (Civil) of the work, Standard **General Conditions of Contract 2023 Construction Works** for CPWD as amended/ modified up to last date of submission of bids.

Part B. General/ specific conditions, specifications etc. applicable to (Civil) work.

Part C. Schedule of quantities.

20. **List of documents to be scanned and uploaded within the period of bid submission:**

i.	Demand Draft / Account Payee Banker's Cheque / FDR /UTR No./ RTGS/Bank Guarantee of any commercial Bank against EMD.
ii.	Copy of receipt for deposition of original EMD (as per ***Form - "A"*** enclosed)
iii.	GST registration Certificate, if already obtained by the bidder. If the bidder has not obtained GST registration as applicable, then he shall scan and upload following undertaking (as per ***Form-"B"*** enclosed) along with bid documents: "If work is awarded to me, I/We shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any payment by the CURAJ, whichever is earlier, failing which I/We shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/or for any action taken by CURAJ or GST department in this regard".
iv.	The bidder should fulfill the criteria of satisfactory execution of works as given below: a) Three similar works of value not less than 40% Rs.94,02,410/- (Ninety-Four Lakh Two Thousand Four Hundred and Ten only) of the estimated cost put to tender, or b) Two similar works of value not less than 60% Rs.1,41,03,610/- (One Crore Forty-One Lakh Three Thousand Six Hundred Ten) of the estimated cost put to tender or c) One similar work of value not less than 80%, 1,88,04,815/- (One Crore Eighty-Eight Lakh Four Thousand Eight Hundred Fifteen Only) of the estimated value completed in the last 7 years ending on the last day of the month previous to the one in which the tenders are invited. ***Note: The contractor should have completed the satisfactorily construction/Civil works in PWD, CPWD, MES, BRO, CPSUs, SPSUs any Central/State Govt. Departments, Central /State Autonomous Bodies.***
v.	The bidder should have average annual financial turnover (gross) of 30% of the estimated cost Rs. 70,51,805 /- Seventy Lakh Fifty-One Thousand Eight Hundred and Five only) of similar works during the immediate last three consecutive financial years balance sheets, ending 31st March 2026, duly audited by Chartered Accountant. Year in which no turnover is shown would also be considered for working out the average. (Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be attached). The value of annual turnover figures shall be brought to the current value by enhancing the actual turnover figures at simple rate of 7% per annum.
vi.	Should not have incurred any loss (profit after tax should be positive) in

	more than two years during the last five years ending 31st March 2026.
(vii)	Should have bidding capacity equal to or more than the estimated cost of the work put to tender. The bidding capacity shall be worked out by the following formula: Bidding Capacity = {[AxNx1.5]-B} Where, A = Maximum turnover in construction works executed in any one year during the last seven years taking into account the completed as well as works in progress. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum. N = Number of years prescribed for completion of work for which bids have been invited. B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited. (Note: Supporting document to be enclosed to determine the bidding capacity).
(viii)	**Solvency Certificate**: The Bidder should have a Solvency equal to or more than 40% of the cost of the proposed work certified by his bankers for this work. Banker's certificates should be on letter head of the Bank, self-attested and should have been issued within Six months from the original last date of submission of the Bid.
(ix)	Networth certificate of minimum 10% of the estimated cost put to tender issued by certified Chartered Accountant with UDIN.
(x)	Copy of Experience Certificate works. In case, bidder doesn't have experience certificate, he shall submit an undertaking in format as per ***Form-"C"*** enclosed along with bid documents:
(xi)	Letter of Transmittal in format as per ***Form-"D"*** enclosed along with bid documents:
(xii)	Copy of Pan card.
(xiii)	Undertaking on structural stability and soundness of already completed works as per ***Form- "E"***
(xvi)	AFFIDAVIT (DULY NOTARIZED) ***Form- "F"***
(xvii)	Any other document as specified in the NIT.

REGISTRAR
CENTRAL UNIVERSITY OF RAJASTHAN

FORM "A"

Receipt of deposition of original EMD

Receipt No. _____dated _____

1.	Name of work	:	**Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.**
2.	NIT No.	:	**CURAJ/R/F.180/2026/7608 Date : 25.11.2026**
3.	Estimated Cost	:	**Rs. 2,35,06,014.68 /-**
4.	Amount of Earnest Money Deposit	:	**Rs. 4,70,120/-**
5.	Last date of submission of bid	:	16.12.2026. at 2:00PM

Signature, Name and Designation
of EMD receiving Official along with Office Stamp

FORM "B"

Undertaking regarding obtaining GST registration Certificate

If work is awarded to me, I/We shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any payment by the CURAJ, whichever is earlier, failing which I/We shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/or for any action taken by CURAJ or GST department in this regard.

Signature of Bidder(s) or an authorized Officer of the firm with stamp

FORM "C"

UNDERTAKING REGARDING ELECTRICAL WORK EXEPERIENCE (if applicable)

To,

The Registrar
Central University of Rajasthan,
Bandarsindri, Kishangarh, Ajmer
(Raj.) 305817

Name of Work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

Sir,
Having examined the details given in tender notice and bid document for the above work, I/we hereby submit the following:

"I / We hereby certify that I / we will provide the similar work experience certificate at the time of execution of electrical work or associate Contractor having experience in Electrical work".

Seal of bidder
Date of
submission
Signature(s) of Bidder(s)

FORM "D"

LETTER OF TRANSMITTAL

To

The Registrar

Central University of
Rajasthan, Bandarsindri,
Kishangarh, Ajmer (Raj.)
305817

Name of Work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

Sir,

Having examined details given in tender notice and bid document for the above work, I/we hereby submit the bid along with all required information and documents.

I/We hereby certify that all the statements made and information supplied by me/us are true and correct.

I / we have furnished all information and details necessary for bid and have no further pertinent information to supply.

I/We also authorize Registrar, Central University of Rajasthan to approach individuals, employers, firms and corporation to verify our details, if required.

Certificate: It is certified that the information given by me/us in the bid are correct. It is also certified that I/We shall be liable to be debarred, disqualified in case any information furnished by me/us is found to be incorrect.

Contact Details of our authorized representative are as under:
Name
Mobile
Number:
Email id:
Contact
Address:

Signature(s) of
Bidder(s) Seal of
bidder

Name of Bidder :
Contact Address :
Email Id of Bidder :
Mobile Number of Bidder(s)

FORM "E"

UNDERTAKING ON STRUCTURAL STABILITY AND SOUNDNESS OF ALREADY COMPLETED WORKS.

I/we undertake and confirm that any development/construction works (composite or single) constructed by our firm / partnership firm / company has not suffered any failure, making it unfit for intended use, either due to structural design and defects or due to use of sub-standard materials or execution of sub-standard work, poor workmanship or any other reason during the last 25 (twenty five) year.

I/we, further, undertake that if such information comes to the notice of CURAJ, then the Registrar, CURAJ shall be free to terminate the bid / agreement and to forfeit the entire amount of earnest money deposit, performance guarantee and security deposits.

I/we, also undertake that in addition to above, the Registrar, CURAJ shall be free to debar us forever from tendering in CURAJ.

The decision of Registrar or any higher authority shall be final and binding.

Signature of notary with seal

Signature of bidder or an authorized person of the firm with stamp

Note : Affidavit to be furnished on a Non-Judicial stamp paper or Rs. 200/- (Scanned copy of the notarized affidavit to be uploaded at time of submission of bid)

FORM ‘F’ AFFIDAVIT (DULY NOTARIZED)

I/We undertake and confirm that I/ We have not abandoned any work of Union Government/ State Governments/ PSU’s etc. during the last 5 years. I/ We have not been blacklisted, debarred, declared non-performer or expelled by Union Government/ State Governments/ PSU’s etc., during the last 3 years upto the last date of receipt of bid. Further it is stated that, if any violation comes to the notice of department, then I/We shall be debarred for biding in CURAJ in future forever. Also, if such a violation comes to the notice of department before or after the date of start of work, the Engineer-In-Charge shall be free to forfeit the entire amount of earnest money deposit / performance guarantee. **(Scanned copy of this affidavit to be uploaded at the time of submission of bid).**

……

Signed by an Authorized Officer of the firm with stamp

INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING FORMING PART OF BID DOCUMENT AND TO BE POSTED ON WEBSITE

The Registrar, Central University of Rajasthan (Tel.No. 01463-257507 & E-mail ID: registrar@curaj.ac.in)) on behalf of the Central University of Rajasthan invites online Percentage Rate Bids from eligible contractors in two bid system for the following work:

Sr. No.	NIT No.	Name of work & Location	Estimated Cost put to tender	Earnest Money	Period of Completion	Last date and time of online submission of bid, EMD Declaration, and other documents as specified	Time & Date of opening of Bid
1	2	3	4	5	6	7	8
1	CURAJ/R/F.180/2026/ 7608 Date: 25.11.2026	Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.	Rs. Rs. 2,35,06,014.68 /-	Rs. 4,70,120/-	03 (Three) Months	16.12.2026 at 02:00 PM	17.12.2026 at 03:00 PM

The contractor submitting the tender should read the schedule of quantities, additional conditions, additional specifications, particular specifications, CPWD- 6 and other terms and conditions given in the NIT and drawings. The bidder should also read the **General Conditions of Contract 2023 Construction Works** for Works with up to date correction slips, which is available as Government of India Publications; however, provisions included in the tender document shall prevail over the provisions contained in the standard form. The contractor should also visit the site of work and acquaint himself with the site conditions before tendering. He should only submit his tender if he considers himself eligible and in possession of all required documents. The following conditions, which already form part of the tender conditions, are specially brought to his notice for compliance while submitting the tender online. They are requested to comply following instructions.

(A) Tenders with any condition including that of conditional rebates shall be rejected forthwith.

(A) The successful bidder shall be required to submit a Performance Guarantee of 5% (Five Percent) of the tendered amount within 15 days of issue of letter of intent and shall be initially valid up to the stipulated date of completion plus minimum 6 months beyond that. This period can be further extended by Registrar, CURAJ up to a maximum period of 7 days on the written request of the contractor and with late fee as defined in Schedule F.

(B) GST, Labour-Cess, Stamp Duty, etc. as applicable shall be borne by the contractor himself. The contractor shall quote his rates considering all such taxes and hence their quoted rates should be inclusive of all the tax components.

(C) It will be obligatory on part of the Contractor/ Bidder to tender for and sign the tender documents for all the component parts. The department reserves right to accept tender in full or in part without assigning any reasons.

1. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.

2. Information and instructions for bidder posted on website shall form part of bid document.

3. The bid documents consisting of plans, specifications, the schedule of quantities of various types of works to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen in the office Estate Section between hours of 10:00 AM and 06:00 PM every day except on Sunday and public holidays or can be seen and downloaded from website https://eprocure.gov.in or www.curaj.ac.in free of cost**.**

Earnest Money Deposit:

The bidder shall be required to submit the Earnest Money Deposit (EMD) for an amount of **Rs. 4,70,120/-** by way of demand draft/ Bank Guarantee/ CURAJ Account only.

The demand drafts shall be drawn in favour of "Central University of Rajasthan" payable at Bandarsindri / Kishangarh. The demand drafts for earnest money deposit must be attached containing the technical bid. The EMD of the successful bidder may be a part of Performance Guarantee and for unsuccessful bidder(s), it would be returned (without interest) after award of the contract. Tenders received without EMD shall not be accepted.
Details of University account for deposition of EMD: Name: Central University of Rajasthan Name of Bank: Bank of India
Branch Name: Central University of Rajasthan
Account No. 666110210000003
IFSC: BKID0006667

The bids will be submitted on 16.12.2026 at 02:00 PM. The technical bid shall be opened 17.12.2026 at 03:00 PM.

4. Those contractors, who are not registered or have not updated their profile on the website mentioned above, are required to get registered / update their profile beforehand on https://eprocure.gov.in.

5. On opening date, the contractor can login and see the tender opening process. After opening of bid of tenders he will receive the competitor's tender sheets.

6. Contractor must ensure to quote rate in the prescribed column(s) meant for quoting rate in figures appears in colour and the moment rate is entered.

7. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO).

   However, If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

8. Certain modifications may be required. Addendum / Corrigendum shall be uploaded by the Engineer-in-Charge, if felt necessary by him, which shall form part of tender document.

9. The bidders are advised to visit the site before submitting his bid to have more clarity about the site conditions and availability of space for execution of the work.

Registrar
Central University of Rajasthan

BID DOCUMENT

PART-A

Volume II

Name of work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

CPWD FORM NO. 7
GOVERNMENT OF INDIA
CENTRAL University of Rajasthan

STATE: Rajasthan
Department: Central University of Rajasthan

PERCENTAGE RATE TENDER & CONTRACT FOR WORKS

Tender for the work of: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

i) To be submitted/uploaded online by 02:00 PM on.16.12.2026 through **website www.eprocure.gov.in.**

ii) The technical bid to be opened online in presence of tenderers who may be present at 03:00 PM on 17.12.2026 in the Central University of Rajasthan.

T E N D E R

I/We have read and examined the Notice Inviting Tender, Schedule A, B, C, D, E & F, Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, Clauses of Contract, Special Conditions, Schedule of Rate and other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for the President of India within the time specified in Schedule 'F', viz. Schedule of Quantities and in accordance in all respects with the Specifications / Special conditions, Designs, Drawings and instructions in writing as referred to in this tender document and with such materials as are provided for, by and in respects in accordance with, such conditions so far as applicable.

I/we agree to keep the tender open for 180 (One Eighty) days from the due date of its opening and not to make any modification in its terms and conditions.

I/We have deposited EMD for the prescribed amount in the office of concerned as per the bid document.

A copy of earnest money deposit receipt of prescribed amount deposited in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee (as prescribed) issued by a Commercial Bank is scanned and uploaded. If I/we fail to furnish the prescribed Performance Guarantee within prescribed period, I/we agree that the President of India or his successor in office shall without prejudice to any other right or remedy be at liberty to forfeit the said

Earnest Money absolutely. Further if I/we fail to commence the work as specified. I/we agree that President of India or his successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said Performance Guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

Further, I/We agree that in case of forfeiture of Performance Guarantee as aforesaid, I/We shall be debarred for participation in the re-tendering process of the work.

I / We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for tendering in CURAJ in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Registrar shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

I/We hereby declare that I/we shall treat the tender documents, drawings and other records connected with the work as Secret / Confidential documents and shall not communicate information / derived therefrom to any person other than a person to whom I/weam/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated:
Witness: -
Address: -
Occupation:
-

Signature of Contractor .....
Postal Address: - .....

Telephone
No. Fax:-
E-Mail:-

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is acceptedby me for and on behalf of the President of India for a sum of Rs.....
(Rupees.....

The letters referred to below shall form part of this contract agreement.

i) Signature
ii)
iii)

Dated: - ..... Registrar
For & on behalf of the Central University of Rajasthan.

SCHEDULES (A to F)

SCHEDULE 'A'

Schedule of quantities- As per NIT

SCHEDULE 'B'

Schedule of materials to be issued to the contractor

S.No.	Description of item.	Quantity. Place of issue	Rate in figures & words at which the material will be charged to the contractor
(1)	(2)	(3)	(4) (5)
		NIL	

SCHEDULE 'C'

Tools and plants to be hired to the contractor

S.NO.	**DESCRIPTION.**	**HIRE CHARGES PER DAY**	**PLACE OF ISSUE**
	NIL		

SCHEDULE 'D'

Extra schedule for specific requirements/ documents for the work, if any.

1. Special conditions - As per NIT
2. Particular Specifications. - As per NIT
3. Annexures - As per NIT

Form of performance security (Bank Guarantee Bond), Form of earnest money deposit (Bank Guarantee Bond), guarantee bond for Water Proofing, Sanitary Installations/ Water Supply/ Drainage, for removal of defects in Stone/ tile work, Aluminium Doors, Windows Ventilator Work, Furniture work etc.

SCHEDULE 'E'

Reference to General Conditions of **Construction** Contract : **General Conditions of Contract 2023 Works** amended up to last date of submission of bids.

1.1 Name of Work: **Construction of Truss & Development of Playground for KV School at Central University of Rajasthan**.

.

1.2 Estimated Cost of work: -

(i) For Civil work : **Rs. 2,35,06,014.68 /-**

1.3 Earnest Money : **Rs. 4,70,120/- Rs. (To be returned after Receiving performance guarantee)**

1.4 Performance Guarantee 5.00% of tendered value

1.5 Security Deposit 2.5 % of tendered value.

SCHEDULE 'F':

General Rules & Directions:-

1. Officer Inviting Tender: **Registrar, Central University of Rajasthan** or his successor thereof SOIL

Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with

Clauses 12.2 & 12.3 See below under Clause-12

Definitions: -

2(i) Engineer-In-Charge: **Executive Engineer, Central University of Rajasthan** or his successor thereof

2(ii) Accepting Authority **The Competent Authority, Central University of Rajasthan**

2(iii) Percentage on cost of materials and labour to cover all overheads and profits 15%

2(iv) Standard Schedule of Rates **DSR-2023 (Civil work),**

2(v) Department Estate Section, Central University of Rajasthan. 2(vi) Standard CPWD Contract Form **GCC 2023 Construction Works** and CPWD Form 7 as amended/ modified up to the last date of submission of bids.

Clause-1 :

(i) Time allowed for submission of performance guarantee, programme chart **15**

days (Time and Progress) and applicable labour licences, registration with EPFO, ESIC and BOCW Welfare Board, Provident Fund Nos. or proof of applying thereof from the date of issue of letter of acceptance.	
(ii) Maximum allowable extension with days late fee @0.1% per day of the performance guarantee amounts beyond the period provided in (i) above	7

Clause-2:

(i)Authority for fixing compensation **Rajasthan** under Clause 2	**Registrar, Central University of or his successor thereof.**

Clause-5:

Number of days from the date of issue of letter of acceptance for reckoning date of start	**15 days**
Mile Stone	Refer Para (A) Table of Milestones as per NIT.
Time allowed for execution of work	**03 (Three) Months**

TABLE OF MILE STONE (S)

Name of work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

Note: Mile stones shall be applicable of the work; the same shall be submitted by the L-1 bidder separately.

Authority to decide:

i. Authority to convey the decision Rajasthan of shifting of milestone and extension of time	Registrar, Central University of or his successor thereof
ii. Re-scheduling of Mile stones Rajasthan Extension of time for completion of work	Registrar, Central University of or his successor thereof
iii Shifting of date of start in case of	Registrar, Central University of

Rajasthan delay in handing over of site. or his successor thereof

Schedule of handing over of site:

Part	**Portion of site**	**Description**	**Time period for handing over reckoned from date of issue of letter of intent**
Part A	Portion without any hindrance	Full site for the work	On the day of issue of letter of commencement of work by the Engineer-in-Charge.

Schedule of issue of Designs: -

Part	**Portion of design**	**Description**	**Time period for issue of design reckoned from date of receipt of tenders**
		Conducting Soil investigation & report submission	**To be done by contractor within** 03 weeks of issuance of LOA
		All Structural, design & Drawing, Architectural Drawings duly vetted by NIT / IIT	Vetted structural Design, drawings to be provided by contractor within 05 weeks of issuance of LOA.

Clause 5.2: -

Nature of hindrance register: Physical (either Physical or Online)

Clause 5.4 :-

Schedule of rate of recovery for delay in submission of the revised programme in terms of delay per days basis

Sl.No.	**Contract Value**	**Recovery Rs. Per day basis**
I.	More than Rs 1 crore but less than Rs. 5 Crore	1000

Clause-6 :-Computerized Measurement Book Yes,

Applicable Clause-7: Gross work to be done together with net payment **Applicable**

Clause-7A:-

Regarding applicability of labour laws Related to Labour licensee, registration of contractor with EPFO, ESIC and BOCW welfare board i/c Provident Fund — Yes, **Applicable**

No running account bill shall be paid in the work till the applicable labour licenses, registration with EPFO, ESIC, BOCW welfare board including Provident Fund Code No. if applicable whatever applicable are submitted by the contractor to the Engineer-in-charge.

Clause-7B:- Yes, **Applicable*(Authority letter to be given by contractor as per Annexure-II)***

Clause 8 A :

Authority to decide compensation on account if contractor fails to submit completion plans — **Registrar Central University of Rajasthan** or his successor thereof

(i) This shall not apply for maintenance or upgradation contracts not involving any services.

(ii) For other works, the recovery shall be made @ **0.1% (Zero-point one percent) of accepted Tendered Value OR recovery rate limit specified below, whichever is more:**

Sl.No.	Contract Value	Recovery Rs.
I.	More than Rs 1 Crore and Less than 5 Crore	5000

CLAUSE 10A :

List of testing equipment to be provided by the contractor at site lab.

Civil :-

All necessary equipment for conducting all necessary tests shall be provided at the site in the well furnished site laboratory by the contractor at his own cost with proper light and ventilation. The following minimum laboratory equipments shall be set up at site office laboratory:-

Sl. No.	Equipment	Numbers (Minimum)
1.	Slump cone, steel plate, tamping rod, steel scale, scoop	1

2.	Weighing scale platform type 100 Kg capacity	1
3.	Graduated glass measuring cylinder	As per requirement (Min 6 nos)
4.	Sets of sieves of 450mm internal dia for coarse aggregate [100mm, 80mm, 63mm, 50mm, 40mm;25mm, 20mm; 12.5mm, 10mm;6.3mm, 4.75mm complete with lid and pan]	1
5.	Sets of sieves of 200mm internal dia for fine aggregate [4.75mm; 2.36mm; 1.18mm; 500 microns;425 microns; 300 microns, 150 micron 90 micron;75micron , with lid and pan]	2
6.	Motorized sieve shaker	1
7.	Cube moulds size 150mmx150mmx150mm	As per requirement
8	Cube Compression testing machine ((Digital) (Min 100kg capacity)	1
9.	Hot air oven temp. Range 50°C to 300°C- sensitivity 1 degree	1
10.	Electronic balance 600gx0.1g., 10kg and 50 kg	1 each

11.	Physical balance weight up to 5 kg	1
12.	Measuring jars 100ml, 200ml, 500ml	As required (Min 2 each)
13.	Gauging trowels 100mm & 200mm with wooden Handle	As required (Min 4 nos)
14.	Spatula 100mm & 200mm with long blade wooden Handle	As required (Min 4 nos)
15.	Vernier calipers 12” & 6” size	1 each
16.	Digital paint thickness meter for steel 500 micron Range	1
17.	GI /MS tray 600x450x50mm, 450x300x40mm,300x250x40mm	2 No each
18.	Screw gauge 0.1mm-10mm, least count 0.05	1
19.	Wash Bottles capacity 500 ml	As required
20.	Hacksaw	2
21.	Measuring tape 30 mtr	6
22.	Shovels & Spade	6
23.	Plastic or G.I. Buckets 15 ltr, 10 ltr, 5 ltr	1 each
24.	Wheel Barrow	3
25.	Floor Brushes, hair dusters, scrappers, wire brush, paint brushes, shutter steel plat oil, kerosene with stove etc.	3 each
26.	Any other equipment for site tests as outlined in BIS codes and as directed by the Engineer-in-charge.	As required
27	Computer and Laser Printer	1 Set

Electrical:-

As per Part – C of NIT

Clause-10-B (ii).

Whether clause 10-B (ii) shall be applicable **Not Applicable**

Clause-10C:-

Component of labour expressed as percent of value of work = NA

Clause 10 CA - **Deleted *(as per O.M. No. DG/CON-Construction-2020/2022 dated 22/12/2022)***

Clause-10-CC: **Not Applicable**

Clause-11:-	Specifications to be followed for execution of work	**:**	**C.P.W.D. Specifications 2019** Vol. I & II with correction slips issued upto last date of submission of bids.
Clause-12:-	Type of Work**:**	**:**	**Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.**
12.2 & 12.3 :	Deviation limit beyond which clause 12.2 & 12.3 shall apply for building work in superstructure.	**:**	100%
12.5	(i) Deviation limit beyond which clause 12.2 & 12.3 shall apply for foundation works (except items mentioned in earth work Sub-Head in DSR and related items)	**:**	100%
	(ii) Deviation limit for items mentioned in Earth work Sub-head of DSR and related items `	**:**	100%
Clause-16:-	Competent Authority for deciding reduced rates.		**Registrar, Central University of Rajasthan** or his successor thereof
Clause 18: -	List of mandatory machinery, tools & plants to be deployed by the contractor at site	**:**	As per NIT and as required for timely execution of work

S.No.	Equipment	Numbers (Minimum)
1.	Fully Automatic Concrete Batching plant	As per Requirement of work
2.	Concrete pump	As per Requirement of work
3.	DG set of minimum capacity 62.5	As per Requirement of work
4.	Transit Mixer	As per Requirement of work

5.	Needle Vibrators	2
6.	Plate Vibrator	1
7.	Tower Crane/Monkey Crane	As per Requirement of work
8.	Builder Hoist	As per Requirement of work
9.	JCB, Excavator, Dumper , Tipper	As per Requirement of work
10.	Reinforcement cutting & Bending machines	As per Requirement of work
11.	Reinforcement threading machine for couplers	As per Requirement of work
12.	Total station.	As per Requirement of work
13.	Auto level & staff.	1
14.	Water tanker(Minimum capacity of 5000 litres)	1
15.	Welding machine 400 Amp	2
16.	Screener for coarse sand and fine sand	2
17.	Centrifugal mono block water pump minimum	1
18.	Steel Shuttering with necessary steel props	As per requirement
19.	Steel scaffolding and staging materials	As per requirement
20.	Plain Concrete/Mortar Mixer	2 Nos.
21.	Semi Automatic Pavement Concrete Paver	As per Actual requirement
22.	Screed Vibrator	As per Actual requirement
23.	Laptop, Printer & Photocopier for billing & project management at Contractors site office.	As per Actual requirement
24.	Any other machinery required for completion of the work as per decision of Engineer-in-charge.	As per Actual requirement

Electrical-

S.No.	Equipments	Quantity
1.	Earthing Tester	1 no.
2	Insulation Tester (LT / HT)	1 no.
3	Tong Tester	1 no.
4	Multimeter	1 no.
5	Lux Meter	1 no.
6	Vernier Caliper	1 no.

7	Wire Gauge	1 no.
8	Hand Blower / Vacuum Cleaner	1 no.
9	Drill Machine	1 no.
10	Chase Cutting Machine	1 no.
11	Crimping Tool Kit	1 no.
12	Self Supporting Ladder - 4 feet	2 nos.
13	Ladder – 20 feet	1 no.

Clause 19 C:-	Authority to decide penalty for each default	**:**	**Registrar, Central University of Rajasthan** or his successor thereof
Clause 19 D:-	Authority to decide penalty for each default	**:**	**Registrar, Central University of Rajasthan** or his successor thereof
Clause 19 G:-	Authority to decide penalty for each default	**:**	**Registrar, Central University of Rajasthan** or his successor thereof
Clause 19 K:-	Authority to decide penalty for each default (The provisions of this clause, shall not be applicable for works with estimated cost put to tenderbeing less than Rs. 5.00 Crores).	**:**	**Registrar, Central University of Rajasthan** or his successor thereof

Clause 25: Constitution of Dispute Redressal Committee (DRC):

Clause-25: Settlement of Disputes by Conciliation and Arbitration

(a) Conciliator for conciliation of disputes	Hon'ble Vice Chancellor, Central University of Rajasthan, or Successor thereof.
(b) Arbitrator Appointing Authority	Registrar, Central University of Rajasthan
(c) Place of arbitration:	CURAJ, Campus or as decided by competent authority.

Clause-32: Requirement of Technical Representative(s) and Recovery Rates (As per need). Technical staff shall be deployed as per direction of the Engineer in- charge as per requirement.

Clause 32	
Requirement of technical representative(s) and recovery rate	

Sl. No.	Minimum Qualification of Technical Representative& Discipline	Designation of Technical Staff	Minimum experience (Years)	Number (Civil + E&M)	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause36(i)		Period of Deployment
					Figures	Words	
1.	Graduate Engineer (Civil Engineering)	Project Manager	20 (and having experience of one similar nature of work)	1 no.	Rs. 60,000/- per month	Rs. sixty thousand per month.	Full duration from start of work to final bill
							payment
2.	Graduate Engineer (Civil)	Deputy Project Manager (Civil)	12 (and having experience of one similar nature of work)	1 no.	Rs. 40,000/- per month per person	Rs. forty thousand per month	From start of work to completion of work
3.	Graduate Engineer or Diploma Engineer (Civil / Electrical / Mechanical	Project/Site Engineer	5 or 10 respectively	1+1 nos.	Rs. 25,000/- per month per person	Rs. twenty five thousand per month per person	From start of work to completion of civil or electrical component of work
	Engineering)						

"Assistant Engineer retired from Government Services who are holding Diploma will be treated at par with Graduate Engineer".

Diploma holder with minimum 10 year relevant experience with a reputed construction co. can be treated at par with Graduate Engineers for the purpose of

such deployment subject to the condition that such diploma holders should not exceed 50% of requirement of degree engineers.

Clause-38:-

i)	Schedule / Statement for determining theoretical quantity of cement & bitumen	**:**	As per **Delhi Schedule of Rates 2023** with amendments upto the last date of submission of
ii)	Variations permissible on theoretical quantities.		
a)	Cement	**:**	2% plus / minus.
b)	Steel Reinforcement and structural steel sections for each diameter, section and category.	**:**	2% plus / minus.
c)	Bitumen for all work.	**:**	2.5% Plus side only and NIL on minus side
d)	All other materials.		Nil.

SCOPE OF WORK

The broad scope Construction of Truss & Development of Playground for KV School at Central University of Rajasthan., Bandersindri, Kishangarh, Ajmer (Sub head: Construction of foundation, steel truss frame and overhead shed, Concrete paver blocks, kerb stone, development of playground etc. at Central University of Rajasthan, Bandersindri, Kishangarh, Ajmer) includes following -

1. Excavation works
2. Filling works
3. Surface dressing, Compaction
4. Design of RCC & Steel Structures.
5. Construction of RCC foundation, MS Shed work, Roof sheet work
6. PCC works, Interlocking Tile works
7. Brick work, plaster work
8. EPDM Flooring work
9. Paint works
10. Submission of vetted Design & vetted (Structural / Architectural) drawing by any IIT/ NIT. However Conceptual Drawing provided for reference.
11. Electric Works
12. Any other civil and Electrical works as directed by University.
13. The Contractor shall carry out, at its own cost and responsibility, all required soil investigations, laboratory and field testing, structural design, and vetting/approval of the structural design from an IIT/ NIT. The same shall be deemed to be an integral part of the scope of work and included in the quoted rates for execution of the works. No separate payment, reimbursement, escalation, or extra claim whatsoever on account of soil investigation, testing, structural design, vetting, review, approval, shifting of utilities or any related activity shall be admissible or entertained by the Central University of Rajasthan.

The contractor is required to keep strong Quality control and get the work which shall be hidden inspected, measured and photographed by the concerned Engineer/ officer before covering it up. The contractor shall have to execute the work in such place and conditions where other agencies will also be engaged for other works such as electrical work etc if required. No claim shall be entertained due to work being executed in the above circumstances. No coordination charges will be paid on this account. The contractor shall deploy his own material, manpower, tools and equipment. The deployed agency or its deployed manpower will not be provided with any residential accommodation at the work place or transportation to or from workplace. No freight charges for transport of materials to Central University of Rajasthan premises or cost of labour will be provided by Central University of Rajasthan. Space for Store room, if required, may be provided to the contractor as per the convenience of Central University of Rajasthan on the discretion of competent Authority. Work shall be executed as per CPWD Specifications 2019 Vol-I and Vol-II.

(On non-judicial stamp paper of minimum Rs. 100)
(Guarantee offered by Bank to CURAJ in connection with the execution of contracts) Form of Bank Guarantee for Earnest Money Deposit / Performance Guarantee/ Security Deposit/Mobilization Advance

1. Whereas the Registrar …… Central University of Rajasthan (CURAJ) on behalf of the President of India (hereinafter called "The Government") has invited bids under…….…… (NIT number) …….…….…….…….…… dated ……. for…….…….…….…….…… (name of work) …….…….…….…….…….…….…….…… The CURAJ has further agreed to accept irrevocable Bank Guarantee for Rs. ……. ……. (Rupees …….…….…….…….…….only) valid upto …….…….…….…… (date)* …… as Earnest Money Deposit from …….…… (name and address of contractor) …….…… (hereinafter called "the contractor") for compliance of his obligations in accordance with the terms and conditions of the said NIT.

   OR**

   Whereas the Registrar …….…… ....., on behalf of the Central University of Rajasthan has entered into an agreement bearing number…….…… with …….…… (name and address of the contractor) ....(hereinafter called "the Contractor") for execution of work …….…… (name of work) …….…….…… The CURAJ has further agreed to accept an irrevocable Bank Guarantee for Rs. …….…… (Rupees…….…… only) valid upto…….…… (date) …….…… as Performance Guarantee/Security Deposit from the said Contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.

2. We, …….…….…… (indicate the name of the bank) .....(hereinafter referred to as "the Bank"), hereby undertake to pay to the CURAJ an amount not exceeding Rs. …….…….…… (Rupees …….…….…… only) on demand by the CURAJ within 10 days of the demand.

3. We, …….…….…… (indicate the name of the Bank) …….…….…….., do here by undertake to pay the amount due and payable under this 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 said Contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. …….…….…… (Rupees ..... only)

4. We, …….…….…… (indicate the name of the Bank)..... , further undertake to pay the CURAJ any money so demanded notwithstanding any dispute or disputes raised by the contractor in any suit or proceeding pending before any Court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the Contractor shall have no claim

against us for making such payment.

5. We, ……. (indicate the name of the Bank)....., further agree that the CURAJ shall have the fullest liberty without our consent and without affecting in any manner our obligation here under to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor or for any forbearance, act of omission on the part of the CURAJ or any indulgence by the CURAJ to the said Contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. We, ……. (indicate the name of the Bank) ……., further agree that the CURAJ at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor at the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee the Government may have in relation to the Contractor's liabilities.

7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

8. We, …….. (indicate the name of the Bank)....., undertake not to revoke this guarantee except with the consent of the Government in writing.

9. This Bank Guarantee shall be valid up to… ..... unless extended on demand by the CURAJ. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. ……. (Rupees... only) and unless a claim in writing
is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.
Date ……
Witnesses:

1. Signature…….
signatory Name and address

Authorized
Name
Designation
Staff Code No.
Bank Seal

2. Signature…….
Name and address

*Date to be worked out on the basis of validity period of 90 days where only financial bids are invited and 180 days for two/three bid system from the date of submission of tender.

**In paragraph 1, strike out the portion not applicable. Bank Guarantee will be made either for earnest money or for performance guarantee/security deposit/mobilization advance, as the case may be.

BID DOCUMENT
PART-B

Name of work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

SPECIAL CONDITIONS (CIVIL)

1.0 **General**

1.1 Except for the items, for which Particular Specifications are given or where it is specifically mentioned otherwise in the description of the items in the schedule of quantities, the work shall generally be carried out in accordance with the "**CPWD specifications 2019 Vol. I & II**" with upto date correction slips, additional / Particular Specifications, Architectural / structural drawings and as per instructions of Engineer-in-Charge.

The several documents forming the tender are to be taken as mutually complementary to one another. Detailed drawings shall be followed in preference to small scale drawings and figured dimensions in preference to scaled dimensions.

Should there be any difference or discrepancy between the description of items as given in the schedule of quantities, particular specifications for individual items of work (including special conditions) and I.S. Codes etc., the following order of preference shall be observed:

(i) Description of Schedule of Quantities
(ii) Particular Specifications and Special Conditions, if any.
(iii) Drawings
(iv) CPWD Specifications.
(v) Indian Standard Specifications of B.I.S.
(vi) Manufacturers' specifications & as decided by Engineer-in-charge.

"In the event of any variation/ discrepancy in the drawings, specifications and tender documents etc. the decision of the Engineer-in-charge shall be final binding and conclusive on the contractor and in the case the contractor have any doubt and the same should be got clarified immediately from the Engineer-in-charge and no claim of the contractor shall be entertained thereafter. Moreover, the agency is not allowed to take benefit out of any clerical/ grammatical mistake in the standard clauses/Schedule of Quantities/Specifications etc. being used in the agreement".

The works to be governed by this contract shall cover delivery and transportation upto destination, safe custody at site, insurance, erection, testing and commissioning of the entire works.

The works to be undertaken by the contractor shall interalia include the following:

(i) Obtaining of Statutory permissions where-ever applicable and required.
(ii) Pre-commissioning tests as per relevant standard specifications, code of practice, Acts and Rules wherever required.
(iii) Warranty obligation for the equipments and/or fittings/fixtures supplied by the contractor.

1.2 Any reference made to any Indian Standard Specifications, shall imply to the latest version of that standard, including such revisions / amendments as issued by the Bureau of Indian Standards upto last date of receipt of tenders. The Contractor shall keep at his own cost all such publications including relevant Indian Standard Codes applicable to the work at site.

1.3 Contractor shall submit all the drawings of services such as Internal water supply, drainage etc. to Engineer-in-Charge before starting any work or placing any order for any of the services etc. These shop drawings/layout drawings shall be got approved from Engineer-in-charge before implementation and this shall be binding on the contractor.

1.4 The work shall be executed and measured as per metric dimensions given in the Schedule of Quantities, drawings etc. (FPS units wherever indicated are for guidelines only).

1.5 All the hidden items such as water supply lines, drainage pipes, conduits, sewers etc. are to be properly tested before covering.

1.6 Samples including brand / quality of materials and fittings to be used in the work shall be got approved from the Engineer-in-Charge, well in advance of actual execution and shall be preserved till the completion of the work.

1.7 Equipments like concrete pumps excavators/Transit mixers etc. shall be allowed to be moved away from the site when, in written opinion of Engineer-in-Charge, the same are no longer required at site of work.

1.8 The contractor, his authorized representative, workmen etc. shall strictly observe orders pertaining to fire precautions prevailing in the area.

1.9 The tenderer shall see the approaches to the site. In case any approach from main road is required at site or existing approach is to be improved and maintained for cartage of materials by the contractor, the same shall be provided, improved and maintained by the contractor at his own cost.

1.10 Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost.

1.11 The contractor shall take all precautions to avoid accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused to work due to negligence on his part. No hindrances shall be caused to traffic, during the execution of the work.

1.12 The contractor shall take instructions from the Engineer-in-Charge regarding collection and stacking of materials at any place. No excavated earth or building rubbish shall be stacked on areas where other buildings, roads, compound wall, services etc. are to be constructed.

1.13 The contractor shall provide at his own cost suitable weighing, surveying and leveling and measuring arrangements as may be necessary at site for checking. All such equipments shall be got calibrated in advance from laboratory, approved by the Engineer-in-Charge. Nothing extra shall be payable on this account.

1.14 Contractor shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of work. All

such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings.

1.15 Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should conform to approved manufacturers specifications where CPWD Specifications are not applicable. The contractor should get the materials (fixtures/fittings) tested from approved labs wherever required at his own cost.

1.16 The work shall be carried out in accordance with the Architectural drawings and Structural drawings, approved, by the Engineer-in-Charge. Before commencement of any item of work, the contractor shall correlate all the relevant architectural and structural drawings, nomenclature of items, specifications etc. and satisfy himself that the information available there from is complete and unambiguous. The figures & the written dimensions of the drawing shall supersede the measurement by scale. The discrepancy, if any, shall be brought to the notice of the Engineer-in-Charge for immediate decision before execution of the work. The contractor alone shall be responsible for any loss or damage occurring by the commencement of work on the basis of any erroneous and/ or incomplete information and no claim, whatsoever shall be entertained on this account.

1.17 The contractor should submit the shop drawing of staging and shuttering for approval of Engineer-in-Charge before actually commencing the execution of work under the item. Nothing extra shall be payable on this account.

1.18 Other agencies may also simultaneously execute and install the works and the contractor shall afford necessary facilities for the same. The contractor shall leave such recesses, holes, openings, trenches etc. as may be required for such related works (for which inserts, sleeves, brackets, conduits, base plates, clamps etc. shall be available as specified elsewhere in the contract) and the contractor shall fix the same at the time of casting of concrete, stone work and brick work, if required, and nothing extra shall be payable on this account.

1.19 All material shall only be brought at site as per program finalized with the Engineer-in-Charge. Any pre-delivery of the material not required for immediate consumption shall not be accepted and thus not paid for.

1.20 The contractor shall procure the required materials in advance so that there is sufficient time for testing of the materials and approval of the same before use in the work.

1.21 Existing drains, pipes, cables, over-head wires, sewer lines, water lines and similar services encountered in the course of the execution of work shall be protected against the damage by the contractor at his own expense. The contractor shall not store materials or otherwise occupy any part of the site in a manner likely to hinder the operation of such services. In case temporary supporting of such services is required to facilitate the work, the same shall be done by the contractor at no extra cost.

In case the existing services are to be shifted permanently, then before dismantling the existing services, alternate/diversion of service lines has to be laid by the contractor so that there is no interruption in use of existing services. The contractor has to plan the alternate suitable route for diversion/shifting of service lines and get the same

approved from the Engineer-in-Charge before starting shifting of services. Nothing extra shall be paid except the payment of dismantling and laying of new service lines as per conditions of contract.

1.22 The contractor shall be responsible for the watch and ward / guard of the buildings, safety of all fittings and fixtures including sanitary and water supply fittings and fixtures provided by him against pilferage and breakage during the period of installations and thereafter till the building/ structure is physically handed over to the client department. No extra payment shall be made on this account.

1.23 The contractor shall be fully responsible for the safe custody of materials brought by him/ issued to him even though the materials may be under double lock key system.

1.24 For construction works which are likely to generate malba / rubbish, contractor shall dispose of malba, rubbish & other unserviceable materials and wastes at his own cost to the notified specified dumping ground and under no circumstances these shall be stacked / dumped even temporarily, outside the construction premises.

1.25 The rates quoted by the Contractor are deemed to be inclusive of site clearance, setting out work, profile, establishment of reference bench mark(s), taking spot levels, construction of all safety and protection devices, barriers, preparatory works, working during monsoon, working at all depths, height, lead, lift and location etc until / unless specified otherwise and any other incidental works required to complete this work. Nothing extra shall be payable on this account.

1.26 For works below ground level the contractor shall keep that area free from water. If dewatering or bailing out of water is required, the contractor shall do it and nothing extra shall be paid except otherwise provided in the items of schedule of quantities.

1.27 The Soil Investigation is covered in the scope of Contractor. No claim whatsoever on account of any discrepancy between the sub-surface strata conditions that may be actually encountered at the time of execution of the work , shall be entertained from the Contractor under any circumstances. The contractor shall include the cost of Soil exploration; Tests & Sub-soil Conditions including Ground water while Quoting.

1.28 Any legal or financial implications resulting out of disposal of earth shall be sole responsibility of the contractor. Nothing extra over the schedule shall be paid on this account.

1.29 The Contractor shall keep himself fully informed of all acts and laws of the Central & State Governments, all orders, decrees of statutory bodies, tribunals having any jurisdiction or authority, which in any manner may affect those engaged or employed and anything related to carrying out the work. All the rules & regulations and bye-laws laid down by Collector / MC etc. and any other statutory bodies shall be adhered to, by the contractor, during the execution of work. The Contractor shall also adhere to all traffic restrictions notified by the local authorities. It is clarified that the extra sewerage charges (one time charges for commencement of work) required to be paid to the Municipal Corporation / other statutory bodies shall be paid by the department and need not be considered by the contractor. The water charges (for municipal water connection as well as tanker water) shall be borne by the contractor. Also, if the

contractor obtains water connection for the drinking purposes from the municipal authorities or any other statutory body, the consequent sewerage charges shall be borne by the contractor. All statutory taxes, levies, charges (including water and sewerage charges, charges for temporary service connections and / or any other charges) payable to such authorities for carrying out the work, shall be borne by the Contractor. The Contractor shall arrange to give all notices as required by any statutory / regulatory authority and shall pay to such authority all the fees that is required to be paid for the execution of work. He shall protect and indemnify the Department and its officials & employees against any claim and /or liability arising out of violations of any such laws, ordinances, orders, decrees, by himself or by his employees or his authorized representatives. Nothing extra shall be payable on these accounts. The fee payable to statutory authorities for obtaining the various permanent service connections and Occupancy Certificate **for the building** shall be borne by the Department.

1.30 **Royalty** at the prevalent rates shall be paid by the Contractor as per the terms of supply between them on all materials such as boulders, metals, sand and bajri etc. collected by him for the execution of the work, directly to the revenue authority of the state government concerned. Nothing extra shall be payable on this account.

1.31 No foreign exchange shall be made available by the Department for importing (purchase) of equipment, plants, machinery, materials of any kind or any other items required to be carried out during execution of the work. No delay and no claim of any kind shall be entertained from the Contractor, on account of variation in the foreign exchange rate.

1.32 The Contractor shall conduct his work so as not to interfere with or hinder the progress of the work being performed by other Contractors or by the Engineer-in-Charge. As far as possible, he shall arrange his work and place, so as not to interfere with the operations of other Contractors or shall arrange his work with that of the others, in an acceptable and coordinated manner and shall perform it in proper sequence.

1.33 The Contractor shall assume all liability, financial or otherwise in connection with this contract and shall protect and indemnify the Department from any and all damages and claims that may arise on any account. The Contractor shall indemnify the Department against all claims in respect of patent rights, royalties, design, trademarks of name or other protected rights, damages to adjacent buildings, roads or members of public, in course of execution of work or any other reasons whatsoever, and shall himself defend all actions arising from such claims and shall indemnify the Department in all respect from such actions, costs and expenses. Nothing extra shall be payable on this account.

1.34 The Contractor shall make all necessary arrangements for protecting from rains, the work already executed and for carrying out the further work, during monsoon including providing and fixing temporary shelters, protections etc. Nothing extra shall be payable on this account. Also, no claims for hindrance shall be entertained on this account.

1.35 In case of flooding of site on account of rain or any other cause and any consequent damage, whatsoever, no claim financially or otherwise shall be entertained not withstanding any other provisions elsewhere in the contract agreement. Also, the

Contractor shall make good, at his own cost, the damages caused, if any.

1.36 The Contractor shall take all necessary precautions to prevent any nuisance or inconvenience to the owners, tenants or occupants of the adjacent properties and to the public in general. The Contractor shall take all care, as not to damage any other adjacent property or other services running adjacent to the plot. If any damage is done, the same shall be made good by the Contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge. The Contractor shall use such methodology and equipment's for execution of the work, so as to cause minimum environmental pollution of any kind during construction, to have minimum construction time and minimum inconvenience to road users and to the occupants of the buildings on the adjacent plot and public in general, etc. He shall make good at his own cost and to the entire satisfaction of the Engineer in Charge any damage to roads, paths, cross drainage works or public or private property whatsoever caused, due to the execution of the work or by traffic brought thereon, by the Contractor. Further, the Contractor shall take all precautions to prevent any pollution of streams and waterways. All waste or superfluous materials shall be carted away by the Contractor, entirely to the satisfaction of the Engineer-in-Charge. Utmost care shall be taken to keep the noise level to the barest minimum so that no disturbance as far as possible is caused to the occupants / users of adjoining buildings. No claim whatsoever on account of site constraints mentioned above or any other site constraints not specifically stated here, shall be entertained from the Contractor. Therefore, the Contractors are advised to visit site and get firsthand information of site constraints. Accordingly, they should quote their tenders. Nothing extra shall be payable on this account.

1.37 All ancillary and incidental facilities required for execution of work like labour camp, stores, fabrication yard, offices for Contractor, watch and ward, temporary ramp required to be made for working at the basement level, temporary structure for plants and machineries, water storage tanks, installation and consumption charges of temporary electricity, telephone, water etc. required for execution of the work, liaison and pursuing for obtaining various No Objection Certificates, completion certificates from local bodies etc., protection works, barricading, testing facilities / laboratory at site of work, facilities for all field tests and for taking samples etc. during execution or any other activity which is necessary (for execution of work and as directed by Engineer-in-Charge), shall be deemed to be included in rates quoted by the Contractor, for various items in the schedule of quantities. Nothing extra shall be payable on these accounts. Before start of the work, the Contractor shall submit to the Engineer-in-Charge, a site / construction yard layout, specifying areas for construction, site office, positioning of machinery, material yard, cement and other storage, steel fabrication yard, site laboratory, water tank, etc.

1.38 The Contractor shall display all permissions, licenses, registration certificates, bar charts, other statements etc. under various labour laws and other regulations applicable to the works, at his site office.

1.39 No tools and plants including any special T&P etc. shall be supplied by the Department and the Contractor shall have to make his own arrangements at his own cost. No claim of hindrance (or any other claim) shall be entertained on this account.

The Contractor shall be allowed to use the facilities if available at site & arranged

by the associate-Contractors and other agencies working at site of the work. The Contractor shall be

(i) Allow to use of scaffolding already erected, toilets, sheds etc.

(ii) Properly co-ordinate their work with the work of other Contractors.

(iii) Provide control lines and benchmarks to his associate-Contractors and the other Contractors.

(iv) Provide electricity and water at mutually agreed rates.

(v) Provide hoist and crane facilities for lifting material at mutually agreed rates.

(vi) Co-ordinate with other Contractors for leaving inserts, making chases, alignment of services etc. at site.

(vii) Adjust work schedule and site activities in consultation with the Engineer-in-Charge and other Contractors to suit the overall schedule completion.

(viii) Resolve the disputes with other Contractor amicably and the Engineer-in-Charge shall not be made intermediary or arbitrator. The contractor shall indemnify the Department against any claim(s) arising out of such disputes.

1.40 On completion of work, the contractor shall submit at his own cost four prints of "as built" drawings of the completed work to the Engineer-in-Charge.

1.41 In case the contractor fails to supply "as built drawing" aforesaid within 30 days of the date of completion, then the recovery @ Rs. 10,000/- for each such set of drawings shall be made from the contractor's final bill.

1.42 The contractor shall have to arrange water of desirable quality for the construction purpose for which he may have to install RO/ Water Softening plant at site or might have to bring/ purchase water from outside as per decision of Engineer-in-charge. Nothing extra shall be paid on this account.

2.0 Unless otherwise specified in the schedule of quantities or CPWD specifications, the rates for respective items shall be all inclusive and apply to the following: -

(i) All labour, material, tools and plants and other inputs involved in the execution of the item.

(ii) Any of the conditions and specifications mentioned in the tender documents.

(iii) Any legal or financial implications resulting out of disposal of earth, if any.

(iv) Payment of Royalty at the prevailing rates, if any, on the boulders, metal, shingle, sand and bajri etc. or any other material collected by him for the work direct to revenue authorities.

(v) Performance test of the entire installation(s) before the work is finally accepted.

(vi) Any cement slurry added over base surface (or) for continuation of concreting for better bond is deemed to have been built in the items.

(vii) All incidental charges for cartage, storage and safe custody of materials brought to site.

(viii) Pumping/ bailing out surface water/rain water/ sub soil water, if necessary for any reason.

3.0 QUALITY ASSURANCE/ TESTING OF MATERIALS

3.1 GENERAL: -

3.1.1 All incidental expenditure on security, construction of cement godown, access roads, **arrangement** of water, electricity etc. to be incurred by the agency for arranging, installing and operation of Batch Mix Plant shall be deemed to have been included in his quoted rates and no claim whatsoever will be tenable on this account.

3.1.2 With each Running Bill, the details of test carried out shall be submitted by the contractor as per Performa **as per NIT of Part-B.**

3.1.3 Samples of materials required for testing shall be provided free of charge by the contractor. The tests are to be carried out in the approved laboratories for testing as approved by CURAJ. All expenditure to be incurred for testing of samples e.g. taking samples, packaging, sealing, transportation, loading, unloading etc. including testing charges shall be borne by the contractor.

a) All the test in field lab setup at construction site shall be carried out by the Engineering Staff deployed by the contractor which shall be 100% witnessed. At least 10% of the tests are to be witnessed by the EE in-charge.
b) All the entries in the registers will be made by the designated Engineering staff of the contractor and same should be regularly reviewed by JE/AE/EE division office.
c) Contractor shall be responsible for safe custody of all the test registers.
d) Submission of copy of all Test Registers, Material at Site Register along with each alternate Running Account Bill and Final Bill shall be mandatory. These registers should be duly checked by JE/AE(P)/EE & receipts of registers should also be acknowledged by Accounts Officer by signing the copies and register to confirm receipt in office.
e) Extensive testing of the materials used for construction is a pre-requisite for attaining high quality of the work. This shall also require specialized tests, physical, chemical, ultrasonic, x-ray and various other types of tests which cannot possibly be carried out in a site laboratory. These tests also require specialized personnel who regularly deal in such testing. Therefore, the need arises for carrying out the tests in outside laboratories. These laboratories may be in the Govt. sector, Semi Govt. or Private sector.

   However, testing of material in any Govt., Lab / IIT or NIT Lab may be allowed by Executive Engineer or higher officers provided these labs have all necessary facility to carry out the required tests.

3.1.4 However, if any ultrasonic pulse velocity/load testing or special testing is to be done for concrete whose strength is doubtful, the cost of the same shall be borne by the contractor.

3.1.5 Special attention shall be paid towards line and level of internal and external plastering, exposed smooth surface of RCC members by providing fresh shuttering plates, sealing shuttering joints, accurate joinery work in wooden doors and windows, thinnest joints in stone/ tiling / cladding work, non-hollowness in floor and dado tiles work, protection of scratches over flooring by impounding layer of plaster of Paris, water tight pipe linings, absence of hollow vertical joints in brick masonry, proper compaction of filled up earth

etc. to achieve an Institution of International standards and up keeping of quality assurance shall be of paramount importance, as such.

3.2 **FIELD LABORATORY: -**

The contractor has to establish field laboratory at site including all necessary equipment's and skilled manpower for the **Field Tests as per NIT of Part-B**at this own cost to have proper quality control.

For performing the above tests, the **Field Testing Equipment's and Instruments as per NIT of Part-B** are to be arranged and maintained by the contractor.

3.2.1 The contractor shall ensure quality construction in a planned and time bound manner. Any sub-standard material / work beyond set-out tolerance limit shall be summarily rejected by the Engineer-in-Charge & contractor shall be bound to replace / remove such sub-standard / defective work immediately.

3.2.2 The list of Laboratory/ Field equipment referred above are to be arranged and maintained by the contractor at the site of work. In case the equipment required for any test is not available at site, the department shall get the test conducted from the third party. However, in that event, besides providing free materials of sample, the cost of taking of sample, packing, transportation, testing charges etc. shall be borne by the contractor irrespective of the results.

3.2.3 The contractor shall establish field laboratory including additional room (of minimum area of 20 sqm. each) for preserving samples of material till the completion of whole work. Nothing extra shall be paid for establishing field laboratory.

3.3 SAMPLE OF MATERIALS:-

3.3.1 All materials and fittings brought by the contractor to the site for use shall conform to the samples approved by the Engineer-in-Charge which shall be preserved till the completion of the work. If a particular brand of material is specified in the item of work in Schedule of Quantity, the same shall be used after getting the same approved from Engineer-in-Charge. Wherever brand / quality of material is not specified in the item of work, the contractor shall submit the samples as per **List of Preferred Makes as per NIT of Part-B** for approval of Engineer-in-Charge. For all other items, ISI Marked materials and fittings shall be used with the approval of Engineer-in-Charge. Wherever ISI Marked material / fittings are not available, the contractor shall submit samples of materials / fittings manufactured by firms of repute conforming to relevant Specifications or IS codes for the approval of Engineer-in-Charge.

3.3.2 To avoid delay, contractor should submit samples as stated above well in advance so as to give timely orders for procurement. If any material, even though approved by Engineer-in-Charge is found defective or not conforming to specifications shall be replaced / removed by the contractor at his own risk & cost.

3.3.3 BIS marked materials except otherwise specified shall also be subjected to quality test besides testing of other materials as per the specifications described for the

item/material. Wherever BIS marked materials are brought to the site of work, the contractor shall, furnish manufacturer's test certificate or test certificate from approved testing laboratory to establish that the material procured by the contractor for incorporation in the work satisfies the provisions of specifications relevant to the material and / or the work done.

BIS marked items (except cement & steel for which separate provisions have been made in para 4.0) required on the work shall be got tested, for only important tests, which govern the quality of the product, as decided by the Engineer-in-Charge. The frequency of such tests (except the mandatory test) shall be 5% of the frequency as specified in BIS. For mandatory test, frequency shall be as specified in the CPWD Specifications.

3.3.4 For certain items, if frequency of tests is neither mentioned in the CPWD Specifications & BIS, then tests shall be carried out as per decision of Engineer-in-Charge.

4.0 CEMENT & STEEL REINFORCEMENT (IF NOT STIPULATED TO BE SUPPLIED BY THE CONTRACTOR).

4.1 Contractor has to produce manufacturers test certificate and challan for each lot of Cement & Steel Reinforcement procured at site.

4.2 **CEMENT:-**

4.2.1 The contractor shall procure 43 grade ordinary Portland Cement conforming to IS: 8112 / Portland Pozzolona Cement conforming to IS: 1489 (Part-1) as required in the work, from reputed manufacturers of cement as per attached list of preferred makeor from any other reputed cement Manufacturer having a production capacity not less than one million tonnes per annum as approved by the competent authority.

4.2.2 Samples of cement arranged by the contractor shall be taken by the Engineer-in-Charge and got tested in accordance with provisions of relevant BIS Codes. The cement for such testing purpose shall be supplied by the contractor free of charge. In case test results indicate that the cement arranged by the contractor does not conform to the relevant BIS Codes, the same shall stand rejected and shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer-in-Charge to do so. The cost of tests shall be borne by the contractor in the manner indicated below:

i) By the contractor, if the results show that the cement does not conform to relevant BIS Codes.

ii) By the contractor, if the results show that the cement conforms to relevant BIS Codes.

4.2.3 Cement shall be brought at site as per requirement or as decided by the Engineer-in-Charge.

4.2.4 OPC & PPC bags shall be stored in separate godowns. Separate godowns for tested cement and fresh cement (under testing) to be constructed by the contractor at his own cost as per sketches given in C.P.W.D Specifications having weather-proof roofs and walls. The size of the cement godown is indicated in the sketches for guidance. The actual size of godown shall be as per site requirements and nothing extra shall be paid for the same. Each godown shall be provided with a single door with two locks. The keys

of one lock shall remain with Engineer-in-Charge or his authorized representative of the work and that of other lock with the authorized agent of the contractor at the site of work so that the cement is issued from godown according to the daily requirement with the knowledge of both parties. The account of daily receipt and issue of cement shall be maintained in a register in the prescribed proforma and signed daily by the contractor or his authorized agent and Engineer-in-Charge or his authorized representative in token of its correctness. The day to day receipt and issue accounts of different grade/brand of cement shall be maintained separately in the standard proforma by the contractor or his authorized representative which shall be duly signed by the authorized representative of the Engineer-in-Charge before issue to the work on day to day basis.

4.2.5 The actual issue and consumption of cement on work shall be regulated and proper accounts maintained as provided in the contract. The theoretical consumption of cement shall be worked out as per procedure prescribed in **Clause-38** of the contract and shall be governed by the conditions laid therein.

4.2.6 If the quantity of cement actually used in the work is found to be more than the theoretical quantity of cement including authorized variation, nothing extra shall be payable to the contractor on this account. In the event of it being discovered that after the completion of the work, the quantity of cement used is less than the quantity ascertained as herein before provided (allowing variation on the minus side as stipulated in **Clause-38**), the cost of quantity of cement not so used shall be recovered from the contractor as specified in schedule. Decision of the Engineer-in-Charge in regard to theoretical quantity of cement which should have been actually used as per the schedule and recovered at the rate specified, shall be final and binding on the contractor.

For non-scheduled items, the decision of the **Engineer-in- Charge** regarding theoretical quantity of the cement, which should have been actually used, shall be final and binding on the contractor.

4.2.7 Cement brought to site and cement remaining unused after completion of work shall not be removed from site without written permission of the Engineer-in-Charge.

4.2.8 In case the contractor brings surplus quantity of cement the same shall be removed from the site after completion of work by the contractor at his own cost after approval of the Engineer-in-Charge.

4.2.9 Cement, which is not used within 90 days from its date of manufacture shall not be used on the work.

4.2.10 The contractor shall be responsible for the watch and ward and safety of the cement go down. The contractor shall facilitate the inspection of the cement go down by the Engineer-in-Charge at any time.

4.2.11 The cement shall be got tested by the Engineer-In-Charge and shall be used on the work only after satisfactory test results have been received. The contractor shall supply free of charge the cement required for testing including its transportation cost to testing laboratories. The cost of tests shall be borne by the contractor

4.2.12 The theoretical consumption of cement shall be worked out as per procedure prescribed

in **clause-38** of the contract and shall be governed by conditions laid therein. In case the cement consumption is less than theoretical consumption including permissible variation, recovery at the rate so prescribed shall be made after ensuring structural soundness and stability on the basis of testing. In case of excess consumption no adjustment need to made.

4.2.13 The damaged cement shall be removed from the site immediately by the contractor on receipt of a notice in writing from the Engineer-In-Charge. If he does not do so within 3 days of receipt of such notice, the Engineer-In-Charge shall get it removed at the cost of the contractor.

4.2.14 Competent authority may change the brand of Cement depending upon availability in local market but conforming to grade mentioned in the NIT and only with ISI mark, if warranted. The name of manufacturers should be finalized after taking into consideration the availability and cost factor. Conditions for cement proposed to be procured in silos may be approved by the NIT approving authority alongwith mode of storage, measurement, testing and grade requirements.

4.3 STEEL REINFORCEMENT: -

4.3.1 Only ISI marked TMT Bars of various grades shall be procured from steel manufacturer.

1. The Engineer-in- Charge Shall approve the steel manufacturers subject to the guidelines for eligibility criteria and other technical parameters given below.

Credentials for eligibility criteria & other technical parameters for steel manufacturers :

The manufacturer should meet the following eligibility criteria :

a) The steel manufacturer should have following documentary evidence:
   i) Certificate of incorporation.
   ii) Memorandum of articles of Association.
   iii) Credit rating of the company from CARE/CRISIL/ICRA (the grading should not be C/D grade for minimum last 3 years).
b) The Steel manufacturer must have following licenses and certificates :
   i) ISI Certificate for billets (IS 2830 : 2012)
   ii) ISI Certificate for TMT Bars (IS 1786 : 2008 (Amendment -1 November 2012))
c) The Steel manufacturer should also preferably have the following licenses :
   i) ISO 9001 : 2015
   ii) ISO 14001 : 2015
   iii) OHSAS 18001 :2007

d) The steel manufacturer should be using iron ore as the basic raw material. The entire gamut of iron and steel production is owned by the same company or its subsidiary company(ies) and the iron making capacity is sufficiently matching the steel making capacity, adopting any of the refining technologies for manufacturing steel & TMT Bars as given under are eligible :
   i) BF-BOF route
   ii) COREX- BOF Route
   iii) DRI-EAF Route (Each Electric Arc Furnace should be 100 MT or more)

e) Billets produced must be ISI marked (IS 2830:2012)
f) The TMT bars produced must be ISI marked (IS 1786:2008)
g) The steel manufacturer should have the following in house testing facilities (NABL Accredited):
    i) Computerized Universal Testing Machine
    ii) Spectrometer
    iii) Bend Re-bend facility as per IS: 1786:2008 (Amendmnt-1 November 2012).
    iv) Raw material laboratory: Arrangement for testing carbon, Sulphur & Phosphorous etc.
    v) Other testing facilities as specified in IS: 1786:2008 & IS: 2830:2012.

4.3.2 For reinforced cement concrete or pre-stressed concrete works, the reinforcement bars shall consist of the following grade confirming to IS 1786: 2008 (Indian Standard Specification for high strength deformed steel bars and wires for concrete reinforcement): Fe 500D/ Fe 550D.

4.3.3 The contractor shall obtain manufacturer's certificate stating the process of manufacture, chemical composition and test sheet giving result of each mechanical test applicable to the material purchased and submit it to the Engineer-in-Charge. Each test certificate shall indicate the number of the cast to which it applies, corresponding to the number or identification mark to be found on the material.

4.3.4 The Engineer-in-Charge shall get each consignment tested for both chemical composition and physical properties (including bend and re-bend test) as specified in IS: 1786 from NABL accredited laboratory of any Government laboratory.

4.3.5 Only corrosion resistant steel rebars shall be used.

4.3.6 Samples shall also be taken and got tested by the Engineer-in-Charge as per the provisions in this regard in relevant BIS codes. In case the test results indicate that the steel arranged by the contractor does not conform to the specifications the same shall stand rejected, and it shall be removed from the site of work by the contractor at his cost within a week time on written orders from the Engineer-in-Charge to do so.

4.3.7 The steel reinforcement bars shall be brought to the site in bulk supply of 10 tonnes or more, or as decided by the Engineer-in-charge.

4.3.8 The steel reinforcement bars shall be stored by the contractor at site of work in such a way as to prevent their distortion and corrosion, and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.

4.3.9 For checking nominal mass, tensile strength, bend test, re-bend test one sample for each, specimens of sufficient length shall be cut from each size of the bar at random, and at frequency not less than that specified below:

Size of bar	**For consignment upto or below 100 tonnes**	**For consignment above 100 tonnes**
Under 10 mm dia bars	One sample for each 25 tonnes or	One sample for each 40 tonnes or
	part thereof	part there of

10 mm to 16 mm dia bars	One sample for each 35 tonnes or part there of	One sample for each 45 tonnes or part there of
Over 16 mm dia bars	One sample for each 45 tonnes or part there of	One sample for each 50 tonnes or part there of

4.3.10 The contractor shall supply free of charge the steel required for testing including its transportation to testing laboratories. The cost of tests shall be borne by the contractor.

4.3.11 The theoretical consumption of steel shall be worked out as per procedure prescribed in **clause-38** of the contract and shall be governed by conditions laid therein. In case the consumption is less than theoretical consumption including permissible variations recovery at the rate so prescribed shall be made. In case of excess consumption no adjustment need to be made.

4.3.12 The steel brought to site and the steel remaining unused shall not be removed from site without the written permission of the Engineer-in-charge.

Annexure-I

Sl.	**Item**	**Check point**	**Remarks**
1.	Steel Producer having manufacturing facilities at Plant.	a) Factory address and Registration no.	
		b) Certificate of manufacturing process.	
		c) Refining process of steel Producer.	
		c.1 BF-BOF route	
		c.2 Corex- BOF route	
		c.3 DRI – EAF route	
		With documentary evidence either for BOF or EAF	
		d. Steel plant having infrastructure for producing sponge iron, billete and TMT Rebars	
		e. Production and Quality Flow Chart	
		f. Plant Evaluation and Process Verification	
		g. List of Plant & Machinery	
2.	Established	Document verification for: a. Govt. / PSU Approvals 2. Established b. Supply orders of TMT Re-bars in Govt. Projects (Minimum-S years) c. Verification of direct supply orders to any State/Central Govt. Department I d. User Certificate issued by any Govt. Department directly	

3.	Indigenous	Documentary evidence like; a. Certificate of Incorporation b. Memorandum of Articles of Association c. Credit rating of the company from CARE/CRISIL/ICRA should not be C/D grade (minimum last 3 year) a. Test Results from Govt./NABL accredited laboratories b. In-house testing facility for physical/Chemical tests (NABL accredited)	
4.	Reliable	d. Calibration Certificates e. List of Lab Equipments: e.1 Spectrometer e.2 Computerized UTM	
5.	Use of Iron-Ore/Processes Iron are as basic raw materials	Verification of Iron-Ore/ Process iron ore invoices	
6.	In-house rolling facility	Plant verification to identify in-house rolling facilities, production of liquid steel & crude steel	
7.	Licenses&Certificates	a. ISO 9001:2008 Certification b. ISO 14001:2004 Certification c. OHSAS18001:2007 Certification d. IS 1786:2008 (TMT Re-bars) IS 2830:1992 (Billets)	
8.	Product Range	TMT Re-bars FE 415/415D/500/500D/550/550D CRS(Corrosion Resistant) & EQR (Earthquake Resistant) TMT Re-bars Size 8 to 36 mm dia	

Note:-

DRI - EAF-> Direct Reduce Iron - Electric ARC Furnace BF- BOF-> Blast Furnace - Basic Oxygen Furnace COREX-BOF->COREX Furnace - Basic Oxygen Furnace

4.3.13 The contractor shall submit original vouchers from the manufacturer for the total quantity of steel supplied under each consignment to be incorporated in the work. All consignment received at the work site shall be inspected by the Site staff along with the relevant documents before acceptance. The contractor shall obtain Original Vouchers and Test Certificates and furnish the same to the Engineer-in-Charge in respect of all the lots of steel brought by him from approved supplier to the site of work. The original vouchers and test certificates shall be defaced by the Site staff and kept on record in the site office.

4.3.14 Reinforcement including authorized spacer bars and lapages shall be measured in length of different diameters as actually (not more than as specified in the drawings)

used in the work nearest to a centimeter. Wastage and unauthorized overlaps shall not be measured.

4.3.15 The standard sectional weights referred to as in Table 5.4 in para 5.3.4 in CPWD Specifications will be considered for conversion of length of various sizes of M.S. Bars, Steel Bars and T.M.T. bars into Standard Weight.

4.3.16 Records of actual Sectional weights shall also be kept dia-wise and lot-wise. The average sectional weight for each diameter shall be arrived at from samples from each lot of steel received at site. The decision of the Engineer-in-Charge shall be final for the procedure to be followed for determining the average sectional weight of each lot. Quantity of each diameter of steel received at site of work each day will constitute one single lot for the purpose. The weight of steel by conversion of length of various sizes of bars based on the actual weighted average sectional weight shall be termed as Derived Actual Weight. However, for the stipulated issue of steel reinforcement up to and including 10mm diameter bars, the actual weight of steel issued shall be modified to take into account the variation between the actual and the standard coefficients and the contractors' accounts will be debited by the cost of modified quantity.

4.3.17 (a) If the Derived Weight as in sub-para (4.3.13) above is less than the Standard Weight as in Sub-para (4.3.12) above then the Derived Actual Weight shall be taken for payment provided, it is within the following tolerances specified in IS1786-2008, otherwise whole lot will be rejected.

Tolerances on Nominal Mass

Nominal Size in mm	Tolerance on Nominal mass Percent		
	Batch	Individual sample*	Individual sample for coil**
a) Upto and including 10	±7	-8	±8
b) Over 10 upto and Including 16	±5	-6	±6
c) Over 16	±3	-4	±4

***** For individual sample plus tolerance is not specified.

******For coils batch tolerance is not specified.

(b) If the Derived Actual Weight is found more than the Standard Weight, the Standard Weight as per in sub-para (4.3.13) above shall be taken for payment. In such case nothing extra shall be paid for the difference between the Derived Actual Weight and the Standard Weight.

Note :- (1) Corrosion Resistant Steel reinforcement bars shall be used as per guidelines issued from CSQ vide O.M. No. CSQ/SE(TAS)/Steel/2022/257-H dated 23/06/2022.

(2) Fire Protection measures shall be taken in Steel Structural System as per guidelines issued from CSQ vide O.M. No. 17/SE(TAS)/Steel/BMTPC/2022/475-H dated 24/11/2022.

5.0 SECRECY

5.1 The contractor shall take all steps necessary that all persons employed on any work in connection with the contract have notice that the Indian Official Secrets Act 1923 applies to them & will continue so to apply even after the execution of such works under the contract.

5.2 The contract is confidential and must be strictly confined to the contractor's own use (except so far as confidential disclosure to sub-contractors or suppliers as necessary) and to the purpose of the contract.

5.3 All documents, copies thereof & extracts there from furnished to the contractor shall be returned to the Engineer-in-Charge on the completion of the work / works or the earlier determination of the contract.

6.0 LABOUR AND SECURITY

6.1 Contractor should provide his plan for labour huts as per his requirement and get it approved from the Engineer-in-Charge. The contractor will be provided space for labour huts etc. inside the campus but the space requirement and location, as assessed by Engineer-in-Charge shall be final and binding.

6.2 Contractor has to follow the security requirement of the campus and obtain necessary entry passes for the labour and vehicles and follow security checks at entry / exit gates, restriction on movement of vehicle, restricted timings of working etc. The Department however shall assist the contractor in obtaining such passes for movement of vehicles and labour.No claim whatsoever shall be entertained on account of delay in entry of vehicles and labour including restrictions in working hours, if there is any.

6.3 The contractor shall employ only Indian Nationals after verifying their antecedents and loyalty. The contractor shall, on demand submit list of his agents, employees and work people concerned & shall satisfy as to the bonafides of such people.

6.4 The contractor & his work people shall observe all relevant rules regarding security promulgated in which work is to be carried out by the Controlling Administrative Authority of the campus/area (hereinafter referred to as "Administrator").

6.5 The contractor, his representative, workman shall be allowed to enter through specified gates & timing as laid down by the controlling authority. They shall be issued an identity card or an individual pass in accordance with the standing rules & regulations & they should possess the same while working. The contractor shall be responsible for the conduct & actions of his workmen, agents / representatives.

6.6 Normally contractor shall be allowed to carryout work between 7 AM to 6 PM. However, he may also be allowed to carry out the work beyond 6 PM & upto 7 AM if the site conditions / circumstances so demand with prior written permission from the "Administrator". However, if the work is carried out in more than one shift or at night, no claim on this account shall be entertained.

6.7 Normally contractor's material / vehicles etc. shall be allowed to move in / go-out between 7 AM to 7 PM only & no movement of material / vehicles out of site of work

shall be allowed during night hours unless specific permission is obtained from the "Administrator".

6.8 In case if a separate entry has been allowed, the contractor has to make all arrangement for making a separate entry gate and barricading of the working area to segregate/separate the same from other areas. All these have to be done by the contractor at his own cost including safeguarding any untoward incident in the restricted inarea due to separate entry gate and barricading arranged by the contractor. No extra amount on this account shall be payable by the department.

7.0 TRANSPORTATION AND OFFICE INFRASTRUCTURE:

7.1 In order to complete the work within the scheduled time if the contractor shall be required to do the work in more than one shift.

7.2 The contractor shall make arrangement for Helmets and leather shoes (meant of construction work at sites) for all field staff of the department during the entire period of construction for safety reasons. One helmet and two pairs of shoes per staff member (maximum ten members) of the departments per year shall be arranged by the contractor.

7.3 The contractor shall establish fully furnished site office having two rooms of 15 sqm. area each for field staff with toilet facility. The electricity and water charges shall be paid by the agency.

8.0 DOCUMENTATION

The Contractor shall render all help and assistance in documenting the total sequences of this project by way of photography, slides, audio / video recording & other records etc. Nothing extra shall be payable to Contractor on this account. However, cost of photographs, slides, audio / video graph etc. shall be borne by the Department. The original films shall be the property of the Department. No copy shall be prepared without the prior approval of the Engineer- in – Charge.

9.0 PROGRAM CHART: -

9.1 The Contractor shall submit a Programme Chart (Time and Progress) for each along with performance guarantee and get it approved from the department. The chart shall be prepared in direct relation to the time stated in the contract documents for completion of the items of the work. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer-in-charge and the contractor within the limitations of time imposed in the contract documents, and further to ensure good progress during the execution of the work. The contractor shall in all cases in which time allowed for any work exceeds one month (save for special jobs for which a separate program has been agreed upon) complete the work as per milestones given in Schedule 'F'.

9.2 The work has to be completed in stages as indicated in the **Table of Milestones under Schedule 'F' as per NIT of Part-B** and the program should be prepared in such a

manner to achieve these Milestones as indicated therein or earlier.

9.3 The program chart should include the following: -

a) Descriptive note explaining sequence of various activities.
b) Network (PERT / CPM / BAR CHART) prepared on MS project which will indicate resources in financial terms, manpower and specialized equipments for every important stage.
c) Program for procurement of materials by the contractor.
d) Program of procurement of machinery / equipments having adequate capacity, commensurate with the quantum of work to be done within the stipulated period, by the contractor.

9.4 If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved program referred above, the contractor shall produce a revised program showing the modifications to the approved program by additional inputs to ensure completion of the work within the stipulated time.

9.5 The submission of revised program or approval by the Engineer-in-Charge of such program or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibilities under the contract. This is without prejudice to the right of Engineer-in-Charge to take action against the contractor as per terms and conditions of the agreement.

Notwithstanding the fact that the contractor will have to pay to the labourers and other staff engaged directly or indirectly on the work according to the provisions of the labour regulations and the agreement entered upon and/or extra amounts for any other reason

10.0 PROGRESS AND MONITORING OF WORK:

10.1 Apart from the above integrated program chart, the contractor shall be required to submit monthly progress report of the work in a computerized form. The progress report shall contain the following, apart from whatever else may be required as specified:

(i) Construction schedule of the various components of the work through a bar chart for the next three quarters (or as may be specified), showing the milestones, targeted tasks and up to date progress.
(ii) Progress chart of the various components of the work that are planned and achieved, for the month as well as cumulative up to the month, with reason for deviations, if any in a tabular format.
(iii) Plant and machinery statement, indicating those deployed in the work.
(iv) Man-power statement, indicating individually the names of all the staff deployed on the work, along with their designations.
(v) Financial statement, indicating the broad details of all the running account payment received up to date, such as gross value of work done, advances taken, recoveries effected, amount withheld, net payments details of cheque payment received etc.

10.2 For completing the work in time, the Contractor might be required to work in two or more shifts (including night shifts). No claim whatsoever shall be entertained on this account, not with-standing the fact that the Contractor may have to pay extra amounts for any

reason, to the labourers and other staff engaged directly or indirectly on the work according to the provisions of the labour and other statutory bodies regulations and the agreement entered upon by the Contractor with them.

10.3 The work should be planned in a systematic manner so that chase cuttings in the walls, ceilings and floors is minimized. Wherever absolutely essential, the chase shall be cut using chase cutting machines. Chases will not be allowed to be cut using hammer / chisel. The electrical boxes should be fixed in walls simultaneously while raising the brick work. The contractor shall ensure proper co-ordination of various disciplines viz. building works, sanitary & water supply & electrical installations etc.

10.4 The contractor shall conduct his work, so as not to interfere with or hinder the progress or completion of the work being performed by other contractor(s) or by the Engineer-in-Charge and shall as far as possible arrange his work and shall place and dispose off the materials being used or removed so as not to interfere with the operations of other contractor or he shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the complete satisfaction of Engineer-in-charge.

10.5 The Contractor shall do proper sequencing of the various activities by suitably staggering the activities within various pockets in the plot so as to achieve early completion. The agency may deploy adequate equipment, machinery and labour as required for the completion of the entire work within the stipulated period specified. Also, ancillary facilities shall be provided commensurate with requirement to complete the entire work within the stipulated period. Nothing extra shall be payable on this account. Adequate number/sets of equipment in working condition, along with adequate stand-by arrangements, shall be deployed during entire construction period. It shall be ensured by the Contractor that all the equipment, Tools & Plants, machineries etc. provided by him are maintained in proper working conditions at all times during the progress of the work and till the completion of the work. Further, all the constructional tools, plants, equipment and machineries provided by the Contractor, on site of work or his work shop for this work, shall be exclusively intended for use in the construction of this work and they shall not be shifted / removed from site without the permission of the Engineer-in-Charge.

10.6 All material shall only be brought at site as per program finalized with the Engineer-in-Charge. Any pre-delivery of the material not required for immediate consumption shall not be accepted and thus not paid for.

~~**11.0**~~ **ENGAGING SPECIALISED AGENCIES FOR WORKS**: -

~~11.1~~

12.0 **DEFECT LIABILITY:** The Defect Liability Period (DLP) shall be 12 months from the date of completion of work and Security deposit will refund after completion of DLP.

13.0 SAFETY MEASURES

13.1 Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost.

13.2 Warning / Caution Boards

All temporary warning / caution boards / glow signage display such as “Construction Work in Progress”, “Keep Away”, “No Parking”, Diversions & protective Barricades etc. shall be provided and displayed during day time by the Contractor, wherever required and as directed by the Engineer-in-Charge. These glow signage and red lights shall be suitably illuminated during night also. The Contractor shall be solely responsible for damage and accident caused, if any, due to negligence on his part. Also, he shall ensure that no hindrance, as far as possible, is caused to general traffic during execution of the work. This signage shall be dismantled & taken away by the Contractor after the completion of work, only after approval of the Engineer – in – Charge. Nothing extra shall be payable on this account.

13.3 Sign Boards

The Contractor shall provide and erect a display board of size and shape as required and paint over it, in a legible and workman like manner, the details about the salient features of the project, as required by the Engineer-in-Charge. The Contractor shall fabricate and put up a sign board in an approved location and to an approved design indicating name of the project, client / owner, architects, structural consultants, Department etc. besides providing space for names of other Contractors, Associate contractors and specialized agencies. Nothing extra shall be payable on this account.

13.3.1 Necessary protective and safety equipments shall be provided to the Site Engineer, Supervisory staff, labour and technical staff of the contractor by the Contractor at his own cost and used at site.

13.3.2 No inflammable materials including P.O.L shall be allowed to be stored in huge quantity at site. Only limited quantity of P.O.L may be allowed to be stored at site subject to the compliance of all rules / instructions issued by the relevant authorities and as per the direction of Engineer -in- Charge in this regard. Also all precautions and safety measures shall be taken by the Contractor for safe handling of the P.O.L products stored at site. All consequences on account of unsafe handling of P.O.L shall be borne by the Contractor.

14.0 Special condition for Hardware and Sanitary Wares:

14.1 Engineer -in-Charge will take a decision regarding model numbers of equivalent Door/window hardware, sanitary ware & Water Supply accessories at the time of execution, in case the material, from the manufacturer whose model number is mentioned, is not available. However, in case, the equivalent model so approved, is cheaper than the model already mentioned in item/approved makes list, the price adjustment will be made based on the difference in market rate. In case, the rate of subsequently approved model is more, no extra payment will be made on this account.

15.0 Ultrasonic Pulse Velocity Method of Test for RCC

15.1 The underlying principle of assessing the quality of concrete is that comparatively higher velocities are obtained when the quality of concrete in terms of density, homogeneity and uniformly is good. The consistency of the concrete as regards its general quality gets established. In case of poorer quality lower velocities are obtained. If there are

cracks, voids or flaws inside the concrete which come in the way of transmission of pulse, lower velocities are obtained.

15.2 The quality of concrete in terms of uniformity, incidence or absence of internal flaws, cracks and segregation etc. indicative of the level of workmanship employed, can thus be assessed using the guidance given in table below, which have been evolved for characterizing the quality concrete in structure in term of the ultrasonic pulse velocity.

Velocity criterion for Concrete Quality Grading.

Sl. No.	Pulse velocity by Cross Probing (km/sec)	Concrete Quality Grading
1.	Above 4.5 Excellent	Excellent
2.	4.5 to 3.5 Good	Good
3.	3.5 to 3.0 Medium	Medium
4.	Below 3.0 Doubtful	Doubtful

Note : In Case of "doubtful" quality it may be necessary to carry further tests.

15.3 Pulse velocity method of test of concrete is to be conducted for CPWD works as a routine test. The acceptance criteria as per the above table will be applicable which is as per IS 13311 (part-1): 1992. From the above "Good" and "Excellent" grading are acceptable and below these grading the concrete will not be acceptable.

15.4 5% of the total number of RCC members in each category i.e. beam, column, slab and footing may be tested by UPV test method for establishing quality of concrete. It is suggested that test be conducted on RCC beam near joint with column, on RCC column near joint with beam, on RCC footings and rafts. On RCC rafts a suitable grid can be worked out for determining number of tests. In addition, doubtful areas such as honeycombed locations, locations, where continuous seepage is observed, construction joints and visible loose pockets will also be tested.

15.5 The test results are to be examined in view of the above acceptance criteria "Good" and "Excellent" and wherever concrete is found with less than required quality as per acceptance criteria, repairs to concrete will be made. Honeycombed areas and loose pockets will be repaired by grouting using Portland Cement Mortar/Polymer Modifies Cement Mortar /Epoxy Mortar, etc. after chipping loose concrete in appropriate manner.

In areas where concrete is found below acceptance criteria and defects are not apparently visible on surface, injecting approved grout in appropriate proportion using epoxy grout /acrylic Polymer modified cements slurry made with shrinkage compensating cement / plain cement slurry etc will be resorted to for repairs.(refer relevant chapters from CPWD Hand Book on Repairs and Rehabilitation of RCC Buildings).Repair to concrete will be done till satisfactory results are obtained as per the acceptance criteria by retesting of the repaired area. If satisfactory results are not obtained dismantling and relaying of concrete will be done.

PARTICULAR SPECIFICATIONS (CIVIL)

1.0 EARTH WORK: -

1.1 Earth work shall be executed as per **CPWD specifications 2019Volume-I,** with upto date correction slips. In addition to that following specifications shall also be followed:

1.2 EARTH WORK FOR MAJOR WORKS

1.2.1 Excavation shall be undertaken to the width of the Basement/Retaining wall footing including necessary margins for construction operation as per drawing or directed otherwise. Where the nature of soil or the depth of the trench and season of the year, do not permit vertical sides, the contractor at his own expense shall put up the necessary shoring, strutting and planking or cut slopes with or without steps, to a safer angle or both with due regard to the safety of personnel and works and to the satisfaction of the Engineer. Measurement of plan area of excavation for payment shall be permitted only.

1.2.2 All the major excavation shall be carried out by mechanical excavator. No extra payment shall be made for that.

1.2.3 The contractor shall make at his own cost all necessary arrangements for maintaining water level, in the area where works are under execution low enough so as not to cause any harm to the work shall be considered as inclusive of pumping out or bailing out water, if required, for which no extra payment shall be made. This will include water coming from any source, such as rains, accumulated rain water, floods, leakages from sewer and water mains subsoil water table being high or due to any other cause whatsoever. The contractor shall make necessary provision of pumping, dredging bailing out water coming from all above sources and excavation and other works shall be kept free of water by providing suitable system approved by the Engineer-in-charge. In order to avoid possibility of basement floor of main building being getting uplifted/damaged due to water pressure, the contractor shall lower the ground water table below the proposed foundation level by boring tube wells all around the proposed building using well point sinking method or any suitable method as approved by Engineer-in-charge. Sub soil water table shall be maintained at least 50 cm. below the P.C.C. level during laying of P.C.C. water proofing treatment, laying of basement raft and beams including filling of earth/sand under the basement floor. The water table shall not be allowed to rise above base of raft level until completion of outer retaining walls including water proofing of vertical surface of walls and back filling along the walls upto ground level and until the structure attains such height to counter balance the uplift pressure. However, the contractor should inspect the site and make his own assessment about sub-soil water level likely to be encountered at the time of execution and quote his rates accordingly. Rate of all items are inclusive of pumping out or bailing out water, if required. Nothing extra on this account whatsoever shall be paid to him. The sequence of construction shall be got approved by the Engineer-in-charge.

1.2.4 The contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades including signs, markings, flags, lights and flagman, as necessary at either end of the excavation/embankment and at such intermediate points as directed by the Engineer-

in-charge for the proper identification of construction area. He shall be responsible for all damages and accidents caused due to negligence on his part.

1.2.5 The contractor shall provide suitable barricading with suitably painted single row of G.I. Sheets about 3'- 0" wide (90 cms) and 3.0 metre high nailed or bolted with wooden poles spaced 2 to 3 metre apart and each pole 1.6 m to 2 m long 8 cm. to 10 cm. dia. The poles will be embedded in mobile iron pedestal rings suitably framed for giving stable

support as per direction of the Engineer-in-charge. All management (including watch and ward) of barricades shall be the full responsibility of the contractor. The barricades shall be removed only after completion of the work or part of the work. The contractor's rate shall include all above items of work and nothing extra shall be paid to the contractor over and above his quoted rates.

2.0 <u>R.C.C. WORK</u>: -

The contractor shall use Ready Mix Concrete (RMC)**OR** Site Batched Design Mix Cement Concrete.

2.1 **General Requirement of READY MIX CONCRETE (RMC) :-**

(a) The contractor shall has to use **Ready Mix Concrete (RMC**) as per IS: 4926. The contractor shall ensure that transit mixtures shall transport the concrete to site. All the precautions shall be taken during the transportation and handling of concrete to achieve the desired strength, durability, etc. as envisaged in the Mix Design. Contractor has to get the approval from Engineer-In-Charge regarding source of RMC by giving the details of such plants indicating name of owner / company, its location, technical establishment, past experience and text of Memorandum of Understanding (proposed to be entered between purchaser and supplier). The Engineer-in-Charge, after satisfying himself about quality / capability of the company shall give approval in writing (subject to drawing of MOU). The MOU shall be drawn with RMC plant owner / company and submitted to Engineer-in-Charge within a week of such approval. The contractor will not be allowed to purchase RMC without completion of above formalities for use in the project. Notwithstanding the approval granted by Engineer-in-Charge in aforesaid manner, the contractor shall be fully responsible for quality of concrete including input control, production, transportation and placement etc. The Engineer-in-Charge will reserve the right to deploy his supervisor at plant site to inspect at any such stage and reject the material / concrete etc. if he is not satisfied about quality of material / product.

(b) All measuring equipment shall be maintained in a clean and serviceable condition and their accuracy shall be checked at least once a month.

(c) Only single sized good quality stone aggregate shall be brought to site of work from the approved source. The grading of the stone aggregate shall be controlled by blending the aggregate of different sizes in the required proportions at site of work The aggregate of different sizes shall be stock-piled separately, preferably a day before use.

The grading of coarse and fine aggregates shall be checked as frequently as possible and as directed by the Engineer-In-Charge to ensure that the specified grading and quality of aggregate is maintained.

(d) It is important to maintain the Water Cement Ratio constant at its specified or approved value by making adjustment for the moisture contents of both fine and coarse aggregates.

The moisture contents in the aggregate shall be determined as frequently as possible in keeping with the weather conditions and as per the provisions of IS: 2386 (Part-III).

(e) All other operations in concreting work like mixing, slump, laying, placing of concrete, compaction, curing etc. not mentioned in this particular specifications for Ready Mix of Concrete shall be as per CPWD Specifications.

2.2 DESIGN MIX OF CONCRETE.

2.2.1 The RCC work shall be done with Design Mix Concrete. Wherever letter M has been indicated, the same shall imply for the Design Mix Concrete. The Design Mix Concrete will be designated based on the principles given in IS: 456, 10262 & SP 23. The Conditions & Specifications stated herein shall have precedence over all conditions & specifications stated in relevant I.S. Codes/C.P.W.D. Specifications. The concrete mix shall be designed for the specified target mean compressive strength in order to ensure that work test result do not fall below the acceptance criteria specified for the concrete

mix. The Contractor shall design mixes for each class of concrete indicating that the concrete ingredients and proportions will result in concrete mix meeting the requirements specified.

(a) The contractor has to submit design mix without use of admixtures.

(b) Admixture may be added (by maintaining the minimum cement content as given under para-2.1.3) in case of specific technical requirement so as to meet the workability / slump requirement or for any other reason but nothing extra is to be paid to contractor on account of adding admixtures.

2.2.2 The sources of coarse aggregate, fine aggregate, water, admixture & cement to be used in concrete work shall be identified by the contractor & he will satisfy himself regarding their conforming to the relevant specifications & their availability before getting the same approved from the Engineer-In-Charge.

(a) **Coarse Aggregate: -** As per CPWD Specifications

(b) **Fine Aggregate: -** As per CPWD Specifications

(c) **Water: -** It shall conform to requirements laid down in IS:456-2000 / Para 3.1.1 of CPWD Specifications. If on testing, water from the source is not found fit for construction, the necessary arrangement for treatment of water shall have to be made by the contractor at the site and nothing extra shall be payable for the same.

(d) **Cement: -** Portland Pozzolona Cement (Fly ash based), required in the work from reputed manufacturers of cement as per the approved make in 50 kg bags bearing manufacturer's name and ISI marking, along with manufacturers test certificate for each lot. Portland Pozzolona Cement is to be used for RCC works only subject to fulfillment of conditions of circular No. CDO/SE(RR)/ Fly ash (MAN) 02 dated 09.04.09 shall be used for Design Mix Concrete and shall conform to IS: 1489-Part-I. However, if the

contractor uses higher grade of cement nothing extra shall be paid.

(e) **Admixture/ Plasticizer:-** The admixture shall conform to IS: 9103. Whenever required, the admixture of approved quality & approved make only shall be used to attain the required workability. Nothing extra on account of use of Admixture / Plasticizer shall be payable.

2.2.3 Water Cement Ratio and Slump :-

2.2.3.1 In proportioning a particular mix, the manufacturer/producer/contractor shall give due consideration to the moisture content in the aggregates, and the mix shall be so designed as to restrict the maximum free water cement ratio to less the 0.5.

2.2.3.2 Due consideration shall be given to the workability of the concrete thus produced. Slump shall be controlled on the basis of placement in different situations. For normal methods of placing concrete, maximum slump shall be restricted to 100mm when measured in accordance with IS:1199.

2.2.3.3 The minimum cement content, maximum free water-cement ratio and minimum grade of concrete are individually related to exposure as per Table 5 of IS: 456, 2000 and as per **CPWD Specifications 2019 (Vol-I)** with upto date correction slips.

Grade of Concrete: - The compressive strength of various grades of concrete with various parameters shall be as follows: -

GRADE DESIGNATION	COMPRESSIVE STRENGTH ON 15 Cm. CUBES min. 7 DAYS (N/mm^2)	SPECIFIED CHARACTERISTIC COMPRESSIVE STRENGTH AT 28 DAYS (N/mm^2)	MINIMUM CEMENT CONTENT (Kg. Per Cub. Mtr.)	MAXIMUM WATER CEMENT RATIO	SLUMP (mm)
(i) M-20	As per Design	20	360	0.50	25-75
(ii) M-25	As per Design	25	380	0.50	25-75
(iii) M-30	As per Design	30	400	0.45	25-75
(iv) M-35	As per Design	35	420	0.45	25-75

NOTE:-

(i) In the designation of a Concrete mix letter M refers to the mix and the number of the specified characteristic compressive strength of 15 cm - Cube at 28 days expressed in N/mm^2.

(ii) It is specifically highlighted that in addition to the above requirements, the maximum cement content for any grade shall be limited to 530 kg. / cubicmetre.

2.2.4 Characteristic Compressive Strength compliance Requirement

Specified Grade	Mean of the Group of 4 Non-overlapping consecutive test results in N/mm2 (Min)	Individual Test Results in N/mm2 (Min)
(1)	(2)	(3)
M15 Or Above	≥F_{ck} + 0.825 x established standard deviation (rounded off to nearest 0.5 N/mm^2) Or F_{ck} +3N/mm^2, whichever is greater where f_{ck} is characteristic compressive strength of CC cube at 28 days.	≥F_{ck} – 3 N/mm^2

Note : (i) In the absence of established value of standard deviation, the values given in Table as mentioned below may be assumed, and attempt should be made to obtain results of 30 samples as early as possible to establish the value of standard deviation.

(ii) For concrete of quantity up to 30 m3 (where the number of samples to be taken is less than four as per frequency of sampling given in para 2.4, the mean of test results of all such samples shall be f_{ck} + 4 N/mm^2, minimum and requirement of minimum individual test result shall be f_{ck} - 2 N/mm^2, minimum. However, when the number of samples is only on as per para 2.4, the requirement shall be f_{ck}+ 4 N/mm^2, minimum

2.2.5 The Contractor shall engage one of the following approved laboratories / test house for designing the concrete mix in accordance with relevant IS Code and to conduct laboratory tests to ensure the target strength & workability criteria for a given grade of concrete: -

(i) Site laboratory of approved RMC plant or own fully automatic batch mix plant approved by Engineer-in-charge.
(ii) IITs, NITs or any Govt. Engineering College.
(iii) National Council for Cement & Building Materials, Ballabhgarh.
(iv) CRRI, Delhi.
(v) In the event of all the above laboratories being unable to carry out the requisite design/testing; the Contractor shall have to get the same done from any other reputed laboratory with prior approval of the Engineer-in-Charge.

Note:- Admixture / Plasticizer to be used in concrete should be PCE (Poly Carboxyl Ether) based.

The various ingredients for mix design / laboratory tests shall be sent to the lab / test houses through the Engineer-in-charge and the samples of such aggregates sent shall be preserved at site by the department.

2.2.6 The contractor shall submit the report on design mix from any of above approved laboratories for approval of Engineer in Charge within 30 days from the date of issue of letter of acceptance of the tender. No concreting shall be done until the design mix is approved. In case of White Portland Cement and the likely use of admixtures in concrete with ordinary Portland/White Portland Cement, the contractor shall design and test the concrete mix by using trial mixes with white cement and / or admixtures also, for which nothing extra shall be payable.

2.2.7 In case of change of source or characteristic properties of the ingredients used in the concrete mix during the work, the contractor as per the directions of the Engineer-in-

charge shall submit a revised laboratory mix design report conducted at laboratory established at site.

2.2.8 All cost of mix designing and testing, connected therewith, including charges payable to the laboratory shall be borne by the Contractor including redesigning of the concrete mix whenever required & as directed by Engineer-In-Charge.

2.2.9 The mix design for a specified grade of concrete shall be done for a target mean compressive strength $T_{ck} = F_{ck} + 1.65s$

Where F_{ck} = Characteristic compressive strength at 28 days.

s = Standard deviation which depends on degree of quality control.

The assumed values of standard deviation for different grades of concrete shall be as follows: -

GRADE OF CONCRETE	STANDARD DEVIATION
M-20	4.0
M-25	4.0
M-30	5.0
M-35	5.0

Note: The above values correspond to the site control having proper storage of cement; weight batching of all materials; controlled addition of water; regular checking of all materials, aggregate gradings and moisture content; and periodical checking of workability and strength. Where there is deviation from the above the values given in the above table shall be increased by 1 N/mm^2.

2.2.10 TRIAL BATCHES

(a) The designed mix proportions shall be checked for target mean compressive strength by means of trial batches.

(b) Minimum three sets of separate preliminary tests shall be carried out for each trial batch of concrete mix. Each test shall comprise of six specimens and only one test-set of six specimens shall be made on any particular day.

(c) The quantities of materials for each trial mix shall be sufficient for at least six specimens (cubes) and the concrete required for carrying out workability tests.

(d) The workability of trial mix No.1 shall be measured and mix shall be carefully observed for freedom from segregation, bleeding and its finishing characteristics. The water content, if required, shall be adjusted corresponding to the required changes in the workability.

(e) With the modified Water Content, the mix proportions shall be recalculated by keeping with water cement ratio unchanged. The mix proportion, as modified, shall form the Trial Mix No.2 and tested for the specified strength and workability.

(f) In addition, trial mix No.3 and 4 shall be designed by keeping water contents same as that determined for trial mix 2 but varying the water cement ratio by $\pm$ 10 percent of the specified value and tested for their design characteristics.

(g) Out of the six specimen of each set, three shall be tested at seven days and remaining three at 28 days. The preliminary tests at seven days are intended only to indicate the strength to be attained at 28 days, while the design mix shall be approved only on the basis of test strength at 28 days.

2.2.11 **APPROVAL OF DESIGN MIX (If applicable)**

The design mix shall be considered satisfactory and approved if at least three preliminary test-sets individually satisfy the following strength and workability criteria:

(a) The average strength of each test-set is not less than the specified target mean compressive strength (Tck).

(b) The strength of any specimen cube is not less than 0.85 Tck.

(c) The concrete mix is of required degree of workability and acceptable concrete finish.

2.3 **General Requirement of Batch Mix Concrete:- (If applicable)**

(a) The contractor shall have to use BATCH MIX CONCRETE. The contractor shall ensure that transit mixtures shall transport the concrete to site. All the precautions shall be taken during the transportation and handling of concrete to achieve the desired strength, durability, etc. as envisaged in the Mix Design.

(b) All measuring equipment shall be maintained in a clean and serviceable condition and their accuracy shall be checked at least once a month.

(c) Only single sized good quality stone aggregate shall be brought to site of work from the approved source. The grading of the stone aggregate shall be controlled by blending the aggregate of different sizes in the required proportions at site of work The aggregate of different sizes shall be stock-piled separately, preferably a day before use.

The grading of coarse and fine aggregates shall be checked as frequently as possible and as directed by the Engineer-In-Charge to ensure that the specified grading and quality of aggregate is maintained.

(d) It is important to maintain the Water Cement Ratio constant at its specified or approved value by making adjustment for the moisture contents of both fine and coarse aggregates.

The moisture contents in the aggregate shall be determined as frequently as possible in keeping with the weather conditions and as per the provisions of IS: 2386 (Part-III).

2.4 **OTHER OPERATIONS: -**

All other operations in concreting work like mixing, slump, laying, placing of concrete, compaction, curing etc. not mentioned in this particular specifications for Ready Mix of Concrete shall be as per CPWD Specifications.

2.5 **SAMPLING: -**

2.5.1 General:

Samples from fresh concrete shall be taken as per IS 1199 and cubes shall be made, cured and tested at 28 days in accordance with IS 516. 15.1.1 In order to get a relatively quicker idea of the quality of concrete, optional tests on beams for modulus of rupture at 72 + 2 h or at 7 days, or compressive strength tests at 7 days may be carried out in addition to 28 days compressive strength test. For this purpose the values should be arrived at based on actual testing. In all cases, the 28 days compressive strength specified in Table 2 of code of practice, IS:456 2000 shall alone be the criterion for acceptance or rejection of the concrete.

(a) **FREQUENCY OF SAMPLING: -**

(i) A random sampling procedure shall be adopted to ensure that the sampling is spread over the entire period of concreting and cover all mixing units. The concretework shall be notionally divided into lots as

under for the purpose of sampling conditions.

-- Footings, rafts etc.
-- Columns and walls at all levels.
-- Beams at all levels.
-- Slabs at all levels.

(ii) At least one test sample shall be taken for each lot of concrete work.
(iii) Each grade of concrete shall form different lot for testing.
(iv) The minimum frequency of sampling of concrete of each grade shall be in accordance with **CPWD specification 2019, Vol I** with upto date correction slips.
(v) The concrete work shall be assessed on day to day basis & samples shall be taken as specified.
(vi) Work strength test shall be conducted in accordance with IS: 516 on random sampling.

However, the minimum frequency of sampling of concrete of each grade shall be in accordance with the following:

Quantity of Concrete in the work m3	***Number of Samples***
I - 5	1
6 - 15	2
6 - 30	3
31- 50	4
51 and above	4 plus one additional sample for each additional 50 cum or part thereof.

NOTE- *At least one sample shall be taken from each Shift. Where concrete is produced at continuous production unit, frequency of' sampling may be decided by Engineer-in-charge in such a manner so as to ensure that each concrete batch shall have a reasonable chance of being tested.*

2.5.2 Test Specimen

Three test specimens shall be made for each sample for testing at 28 days. Additional samples may be required for various purposes such as to determine the strength of concrete at 7 days or at the time of striking the formwork, or to determine the duration of curing, or to check the testing error. Additional samples may also be required for testing samples cured by accelerated methods as described in IS 9103. The specimen shall be tested as described in IS 516.

2.5.3 **TEST RESULTS OF SAMPLES: -**

The test results of the sample shall be the average of the strength of three specimens. The individual variation shall not be more than $\pm$ 15% percent of the average. If variation is more, the test results shall be treated as invalid. 90% of the total tests shall be done at the laboratory established at site by the contractor and remaining 10% in any other laboratory as directed by the Engineer-in-Charge.

2.5.4 ACCEPTANCE CRITERIA

2.5.5 Compressive Strength

The concrete shall be deemed to comply with the strength requirements when both the following conditions are met:

a) The mean strength determined from any group of four consecutive test results compiles with the appropriate limits in col 2 of Table given under para 2.1.4 above.
b) Any individual test result complies with the appropriate limits in col 3 of Table given under para 2.1.4 above.

2.5.6 Quantity of Concrete Represented by Strength Test Results

The quantity of concrete represented by a group of four consecutive test-results shall include the batches from which the first and last samples were taken together with all intervening batches.

Where the mean rate of sampling is not specified the maximum quantity of concrete that four consecutive test results represent shall be limited to 60 m3.

2.5.7 Concrete of each grade shall be assessed separately.

2.5.8 Concrete is liable to be rejected if it is porous or honey-combed, its placing has been interrupted without providing a proper construction joint, the reinforcement has been displaced beyond the tolerances specified, or construction tolerances have not been met. However, the hardened concrete may be accepted after carrying out suitable remedial measures to the satisfaction of the Engineer-in-Charge.

2.6 **MEASUREMENT –**

i) As per **CPWD Specifications 2019(Vol-I)** with upto date correction slips
ii) In respect of all projected slabs at all levels including cantilever, canopy, the payment for the RCC work shall be made under the item RCC slabs. The payment for shuttering at the edges shall be made under item of centering and shuttering for RCC slabs. Nothing extra shall be paid for the side shuttering at the edge of these projected balconies / projected verandah slabs.

2.7 **TOLERANCES -** As per CPWD Specifications.

2.8 **RATES: -**

i. The rate includes the cost of materials, labour and T&P, including mixing, placing, transportation involved in all the operations described above except for the cost of centring, shuttering & reinforcement which will be paid for separately. It includes finishing i.e. making the top surface of smooth/in required level with trowel etc.
ii. In case of rejection of concrete on account of unacceptable compressive strength, governed by para “Standard of Acceptance” as above, the work for which samples have failed shall be redone at the cost of contractor. However, the Engineer-in-charge may order for additional tests (like cutting cores, ultrasonic pulse velocity test, load test on structure or part of structure, etc) to be carried out at the cost of contractor to ascertain if the portion of structure wherein concrete represented by the sample has been used, can be retained on the basis of results of individual or combination of these tests. The Contractor shall take remedial measures necessary to retain the structure as approved by the Engineer-in-charge without any extra cost. However, for payment, the basis of rate payable to contractor shall be governed by the 28 days cube test results and reduced rates shall be regulated in accordance with CPWD Specifications.

2.9 **RCC WORK (ORDINARY**)

2.9.1 The work shall be done in accordance with **CPWD Specifications 2019 (Vol-I)** with upto date correction slips.

2.9.2 Water Cement ratio for Ordinary RCC work shall not be more than 0.5. Contractor shall use concrete mixture of proper design having arrangement for measuring water for mixing of concrete.

2.10 **FORM WORK**

2.10.1 The work shall be done in general as per CPWD Specifications.

2.10.2 Only M.S. centering / shuttering and scaffolding material unless & otherwise specified shall be used for all R.C.C. work to give an even finish of concrete surface. However, marine-ply shuttering in exceptional cases as per site requirement may be used on

specific request from contractor to be approved by the Engineer-in-Charge. But nothing extra shall be paid on this a/c.

2.10.3 Nothing extra shall be paid for the centering and shuttering, circular in shape whenever the formwork is having a mean radius exceeding 6m in plan.

2.10.4 Nothing extra shall be paid for grid beams and the corresponding slabs having clear span more than 1.20 metres.

2.10.5 In order to keep the floor finish as per architectural drawings and to provide required thickness of the flooring as per specifications, the level of top surface of R.C.C. shall be accordingly adjusted at the time of its centering, shuttering and casting for which nothing extra shall be paid to the contractor except the places where different type of flooring is provided in the same room.

As per general engineering practice, level of floors in toilet / bath, balconies, shall be kept 12 to 20mm or as required, lower than general floors shuttering should be adjusted accordingly. Nothing extra is payable on this account.

2.10.6 Steel shuttering as approved by the Engineer-in-Charge shall be used by the contractor. Minimum size of shuttering plates shall be 600mm x 900mm except for the case when closing pieces are required to complete the shuttering panels.

Dented, broken, cracked, twisted or rusted shuttering plates shall not be allowed to be used on the work. The shuttering plates shall be cleaned properly with electrically driven sanders to remove any cement slurry or cement mortar or rust. Proper shuttering oil or de-bonding compound shall be applied on the surface of the shuttering plates in the requisite quantity before assembly of steel reinforcement.

2.11 **REINFORCEMENT** :-

2.11.1 The reinforcement shall be done as per CPWD Specifications.

2.11.2 The rate of item of reinforcement of RCC work includes all operations including

straightening, cutting, bending, welding, binding with annealed steel wire or welding and placing in position at all the floors with all leads and lift complete as per CPWD Specifications.

2.11.3 The contractor shall provide approved type of support for maintaining the bars in position and ensuring required spacing and correct cover of concrete to reinforcement as called for in the drawings, spacer blocks of required shape and size. Chairs and spacer bars shall be used in order to ensure accurate positioning of reinforcement. **Spacer blocks shall be casted well in advance with approved proprietary pre-packed free flowing mortars (Conbextra as manufactured by M/s Fosroc Chemicals India Ltd. or of approved equivalent)** of high early strength and same colour as of surrounding concrete. However, Cover Guard Bars shall also be used to maintain proper cover of RCC Columns in addition to spacer blocks as mentioned above. Pre-cast cement mortar/concrete blocks/blocks of polymer shall not be used as spacer blocks unless specially approved by the Engineer-in-charge, rate of RCC items is inclusive of cost of such cover blocks & Cover Guard Bars.

2.12 PRE-CAST RCC WORK

2.12.1 The work shall be done in accordance with CPWD Specifications.

2.12.2 Pre -cast reinforced concrete units shall be of grade or mix as specified. Provision shall be made in the mould to accommodate fixing devices such as hooks etc. and forming of notches and holes. Each unit shall be cast in one operation. A sample of the unit shall be got approved from Engineer-in-charge before taking up the work.

2.12.3 Pre-cast units shall be clearly marked to indicate the top of member and its location.

2.12.4 Pre -cast units shall be stored, transported and placed in position in such a manner that these are not damaged.

2.12.5 The compaction of the concrete shall be done by vibrating, table or external vibrator, as approved by Engineer-in-charge. The rate quoted for the item shall include the element for framework and mechanical vibration.

2.12.6 Rate for item includes cost of all materials. labour, and all operations involved. Cost of M.S. frames, lugs including their welding, lifting hooks is also included.

2.12.7 In the item of providing and fixing precast reinforced cement concrete in shelves the cost of cutting chases and making good the same shall be inclusive in the item and nothing extra shall be paid on this account.

3.0 BRICK WORK:-

3.1 The brickwork shall be carried out with good quality well burnt FPS bricks of class designation 75 as per CPWD Specifications. Exposed brick work for ground level to plinth level shall be executed with selected FPS bricks of class designation 75.

3.2 The rate shall also include for leaving chases / notches for dowels / cramps for all kinds of cladding to come over brick work.

3.3 Brick work provided around shaft or lift walls or around slab cutouts shall be

measured in the brick for corresponding floor level. Nothing extra shall be paid on this account.

3.4 M.S. Strip/ Bar provided at every third course of half brick masonry shall be in single piece. If required, welding joint can be used without overlaps. Nothing extra shall be paid for welding and overlaps.

4.0 **AAC BLOCKMASONRY WORK**

a. The masonry shall be done as per CPWD Specifications 2019, Volume-I & II with revisions/ amendments / correction slips upto 10.01.2024.

b. AAC blocks masonry shall be of Grade I and of oven dry density 551-650 kg/cum. It shall be done with polymer modified adhesive mortar above plinth level except wet areas and fly ash brick masonry of class designation 10 shall be done in foundation and wet areas with cement mortar.

c. Grassfire mesh of good quality to be provided in plaster at the junction of Masonry and RCC or CC Member/band.

Autoclaved Aerated Concrete Block masonry work

d. Dimensions & Tolerances: Autoclave Aerated Concrete Block shall be made in sizes and shapes to fit different concrete needs. They include stretcher, corner, double corner or pier, jamb, header, bull nose, partition block and concrete floor units.

Autoclave Aerated Concrete Block shall be referred to by its normal dimension the term ‘normal’ means that the dimension includes the thickness of the mortar joints. The actual dimension shall be 10mm short of the normal dimension (or 6mm short in special areas finer joints as specified). The normal dimension of the concrete block shall be as follows:

i. Length: 400, 500 or 600 mm

ii. Height: 200, 250 or 300 mm

iii. Width: 100, 150, 200, 225, 230 or 250 mm

e. In addition, Autoclave Aerated Concrete Block shall be manufactured in half length of 200, 250 or 300 mm correspond to the full lengths. The nominal dimensions of the units are so designed that taking account of the thickness of mortar joints, they will produce wall lengths and heights which will conform to the principles of modular co-ordination.

f. Block of sizes other than those specified above, may also be used if so required in special cases.

g. The maximum variation in the length of the Autoclave Aerated Concrete Block shall not be more than plus/minus 5mm and maximum variation in the height and width of Autoclave Aerated Concrete Block, not more than plus/minus 3mm.

h. The faces of Autoclave Aerated Concrete Block shall be flat & Rectangular, opposite faces shall be parallel and all arises shall be

square. The bedding surfaces shall be at right angle to the face of the Blocks. The Autoclave Aerated Concrete Block with special faces shall be manufactured and supplied if so required.

i. The autoclaved Autoclave Aerated Concrete Block shall be classified in two grades according to their compressive strength as indicated in table below:

Sl. No.	Density in oven dry condition (kg/m2)	Compressive Strength (Min)		Thermal Condition in Air dry condition (W/m.k)
		Grade-I (N/mm^2)	Grade-II (N/mm^2)	
1	451 to 550	2.00	1.50	0.21
2	551 to 650	4.00	3.00	0.24
3	651 to 750	5.00	4.00	0.30
4	751 to 850	6.00	5.00	0.37
5	851 to 1000	7.00	6.00	0.42

h. All Autoclave Aerated Concrete Block shall be sound, free of cracks or other defects which interfere with the proper placing of block units impair the strength or performance of the construction. Where block units are to be used in exposed wall construction, the face or faces that are to be exposed shall be free of chips, cracks or other imperfections except that if not more than 5% of a consignment contains slight cracks or small chippings not larger than 25mm, this shall not be deemed grounds for rejection.

i. **Block Density –** The Block density shall conform to the requirements specified in above table, when tested accordance with IS 6441 (Part-1) - 1972.

j. **Compressive Strength –** The min. compressive strength being the average of twelve block units shall be as prescribed in above table, when tested accordance with accordance with IS 6441 (Part-5) -1972

k. **Thermal Conductivity –** The thermal conductivity shall be not exceed the values specified in above table when tested accordance with IS 3346 - 1980

l. **Drying Shrinkage –** The drying shrinkage shall be not more than 0 .05% for grade – 1 block and 0.10% for grade-2 block when tested accordance with IS 6441 (Part-2) - 1972.

m. **Number of tests :** A sample of 24 blocks shall be selected at random.All the 24 Blocks shall be checked for dimensions and inspected for visual defects. Out of the 24 blocks, 12 blocks shall be subjected to the test for compressive strength, 3 blocks to the test for density, 3 blocks to the test for thermal conductivity and 3 blocks to the test for drying shrinkage. The remaining 3 blocks shall be reserved for re-test for drying shrinkage if a need arises.

n. The samples of AAC blocks (each sample consisting of 6 specimen) shall be chosen randomly from the lot procured and tested for various

parameters specified as above. One samples shall be tested for every **200 cum** or part thereof. However, minimum one sample shall be tested from each lot received at site if the quantity procured in the lot is less than 200 cum. If required, Engineer-in-Charge or his authorized representative shall inspect the factory during production of the material for this work and also collect samples (of materials used for making AAC blocks and precast AAC blocks) from the factory itself.

o. The contractor shall consider this contingency also while placing the order with one of the approved firms. Nothing extra shall be payable on this account.

p. **Criteria for conformity :**The number of blocks with dimensions outside the tolerance limit and or with visual defects, among those inspected, shall not be more than two. For density, the mean value shall be within the range as specified in above Table. For compressive strength, the mean value, say X shall be determined. The test results shall be grouped into groups of 4, individual values of ranges shall be determined, the average range a calculated from these values and shall satisfy the following condition: X- 0.6 R> minimum value specified in above Table. For thermal conductivity, the mean value shall be equal to or less than the value specified in above Table. For drying shrinkage, all the test specimens shall satisfy the requirements of the test. If one or more specimens fail to satisfy the requirements, the remaining 3 blocks shall be subjected to these tests. All these blocks shall satisfy the requirements.

q. **Manufacturer's Certificate :** The manufacturer shall satisfy himself that the masonry units conform to the requirements of this specification and, if requested, shall supply a certificate to this effect to the purchaser or his representative.

r. **Marking :** Each lot of concrete masonry units manufactured in accordance with this specification shall preferably be marked with information-

    i. The identification of the manufacture.

    ii. The grade and block density of the unit.

    iii. The month and year of manufacturing.

s. The RCC band shall be provided in AAC block masonry to increase the strength and compatibility. The RCC band shall be provided at sill level, lintel level and intermediate levels over throughout the wall asper specifications. This thickness of the band shall be approved by the Engineer-in-Charge or as specified in drawing.

t. Autoclave Aerated Concrete Block masonry shall be provided with polymer modified adhesive mortar. The polymer modified adhesive mortar shall be provided @ 30 kg per cum.

u. Autoclaved Aerated Concrete Block confirming the IS Code – 2185 (Part-3) 1984 (Reaffirmed 2005)

5.0 STONE / MARBLE WORK

5.1 General: - The execution of stones work shall be in general as per **CPWD Specifications 2019(Vol.-I**), with up-to-date correction slips.

5.2 GRANITE/ MARBLE WORKS

5.2.1 The granite/ marble stonework shall, in general, be carried out as per the CPWD Specifications. The specifications for dressing, laying, curing, finishing, measurements, rate etc. for the granite/ marble stone flooring shall be same as that of works for the

Marble flooring, skirting and risers of steps under Flooring Sub Head of the CPWD Specifications. The wall lining / veneer work with granite/ marble stone shall be as per the CPWD Specifications for Marble work Sub Head.

5.2.2 The decision of the Engineer-in-Charge as regards the approval of the samples for the various types of the granite/ marble stones shall be final and binding on the Contractor. No claim of any kind whatsoever shall be entertained from the Contractor on this account. The Contractor shall then procure and get the mock up prepared at site of work for approval of quality of workmanship and the granite/ marble stone as specified. The mock up shall be prepared in lift lobby, toilet etc. on one of the floors. The size of the stones shall be as per the architectural drawings. If the quality of the workmanship and the material is as per the required standards, the mock up shall be allowed as part of the work and measured for payment and shall not be dismantled. Otherwise, it shall be dismantled by the contractor as directed by the Engineer-in-Charge and taken away from the site of the work at his own cost. Nothing extra shall be payable on this account.

5.2.3 That the curvilinear profile of the entrance steps for the building shall be negotiated in segmental manner (using trapezoidal shaped granite stone pieces with straight edges for treads and rectangular stone pieces for the risers) and not in curved profiles as specified earlier. However, the granite/ marble stone slabs shall be cut to required sizes and shapes, as per the architectural drawings, to negotiate the curved steps in segmented manner. The risers shall also be cut to required sizes and shapes and the edges chamfered at the joints, all as per the architectural drawings. However, the Contractor shall prepare the detailed shop drawings for the same and commence work only after the approval by the Engineer-in-Charge. The rate shall also include any consequent wastage, incidental charges involved in this work. Nothing extra shall be payable on this account. For the purpose of payment, the actual area of each type of granite/ marble stone as laid shall be measured.

5.2.4 For the steps (risers and treads) in the linear profile, the granite/ marble stone shall be provided in single pieces up to 2.0m as per the architectural drawings, unless otherwise specifically permitted by the Engineer-in-Charge. Wherever grooves are required to be provided the same is to be done as per architectural drawings and as directed by the Engineer-in-charge. Wherever required, the joints shall be provided as per the architectural drawings. Nothing extra shall be payable on these accounts.

5.2.5 The granite/ marble slabs used for providing and fixing in the sills, soffits and jambs of doors, windows, ventilators and similar locations shall be in single piece unless

otherwise directed by the Engineer-in-Charge. Wherever stone slab other than in single piece is allowed to be fixed, the joints shall be provided as per the architectural drawings and as per the directions of the Engineer-in-Charge. In the cabin areas, the joints in sills shall preferably be provided in line with the partition wall. Depending on the number of joints, as far as possible, the stone slabs shall be procured and fixed in slabs of equal lengths as per the architectural drawings and as directed by Engineer-in-Charge.

5.2.6 While fixing the granite/ marble slabs in sills, soffits and jambs of doors, windows, ventilators etc., rebates shall be made by overlapping the stones at the required places for fixing shutters for doors, windows and ventilators etc. as shown in the architectural drawings and as per the directions of the Engineer-in-Charge. Epoxy based adhesives shall be used for fixing the granite/ marble stones to each other, or wherever required. The authorized overlap as per the architectural drawings or as directed by the Engineer-in-Charge shall be measured for payment under the same item. However, any extra mortar thickness required due to the overlap arrangement shall be deemed to have been included in the rate of this item. Nothing extra shall be payable on this account. The granite/ marble stone slab shall be fixed over low-level storage cabinets using necessary adhesive as per the manufacturer's specification. The stone shall have uniform thickness and shall be provided in sizes as per the architectural drawings. The stone slab shall have uniformly leveled surface after fixing. All the joints shall be finished smoothly in a workmanlike manner.

5.2.7 The granite/ marble work shall be adequately protected by a layer of Plaster of Paris, which shall be maintained throughout and removed just before handing over of the works for which nothing extra shall be payable.

5.2.8 **Acceptance Criteria**: - The stone/tile work shall carry Five years guarantee after completion of work against unsound material, workmanship as per guarantee bond. Five years guarantee in prescribed Performa attached **as per NIT of Part- B** must be given by the specified firm, which shall be counter signed by the contractor, in token of his overall responsibility. 10% (Ten percent) of the cost of these items would be retained as security deposit in addition to normal security deposit of the whole work and the amount so deducted would be released after five years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory. If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department

5.3 SAMPLES FOR STONE WORK

Samples of each item of stone work either individually or in combination shall be prepared for approval of Engineer-in-charge before commencement of work.

6.0 WOOD WORK

6.1 The wood work in general shall be carried out as per **CPWD Specifications 2019 (Volume-I)**, with up-to-date correction slips.

6.2 The factory shall be got approved from the Engineer-in-charge before commencement of work for factory made wood work. The sample of timber to be used shall be

deposited by the contractor with Engineer-in-charge before commencement of work.

6.3 The shape and size of beading shall be as per drawings. The joints of beading shall be mitred.

6.4 Timber shall be of specified species, good quality and well-seasoned. It shall have uniform colour, reasonably straight grains and shall be free from knots, cracks, shakes and sapwood. It shall be close grained. The contractor shall deposit the samples of species of timber to be used with the Engineer-in-Charge for testing before commencement of the work.

6.5 Wood work shall not be painted, oiled or otherwise treated before it has been approved by the Engineer-in-charge. All portion of timber including architrave abutting against masonry, concrete, stone or embedded in ground shall be painted with approved wood preservative or with boiling coal tar.

6.6 The contractor(s) shall produce cash voucher and certificates from approved Kiln Seasoning Plants about the timber used on the work having been kiln seasoned and chemically treated by them, falling which it would not be so accepted as kiln seasoned and/or chemically treated.

6.7 Transparent sheet glass conforming to IS: 2835 – 1977 shall be used. Thickness being governed as under unless otherwise specified in the item in wood work/steel work:

Area of Glazing	Thickness
(a) For glazing area up to 0.50 sqm	4.0 mm
(b) For glazing area more than 0.50 sqm	6.0 mm

6.8 Factory made wooden flush door shutters shall be carried out as per **CPWD specifications 2019 (Vol.-I)** with upto date correction slips).

6.9 The work shall be executed through specialized agencies to be approved by the Engineer in Charge.

6.10 The contractor shall propose well in advance to Engineer-in-Charge, the names and address of the factory where from the contractor intends to get the shutters manufactured along with the credential of the firm. The contractor shall place the order for manufacturing of shutters only after obtaining approval of the Engineer in Charge whose decision in this case shall be final & binding. In case the firm is not found suitable he shall propose another factory. The factory may also be inspected by a group of officers before granting approval; shutters shall however he accepted only if these meet the specified test.

6.11 Contractor will arrange stage wise inspection of the shutters at factory by the Engineer-in-Charge or his authorized representative. The contractor will have no claim if the shutters brought at site in part or full lot are rejected by the Engineer-in-Charge due to bad workmanship / quality. Such defective shutters will not be measured and paid. The contractor shall remove the same from the site of work within 7 days after the written instruction in this regard are issued by the Engineer-in-Charge.

6.12 The shutters should be brought at site without primer / painting.

7.0 GS Sheet- All steel work shall be carried out as per CPWD specifications 2019 (Volume-I) with up-to-date correction slips

8.0 **STEEL WORK**

All steel work shall be carried out as per **CPWD specifications 2019 (Volume-I)** with up-to-date correction slips.

a) Structural Steel Tube These shall be of: 1. Hot finished welded (HFW) type, or 2. 3. Hot finished seamless (HFS) type, or Electric resistance or induction butt welded (ERW), having carbon content less than 0.03 percent, yield stress of 21.5 kg/mm2 (YST 210) type. Conforming to the requirement of IS 1161. The steel tubes when analysed in accordance with the method specified in IS 228 shall show not more than 0.06 percent sulphur, and not more than 0.06 per cent phosphorous. Tubes shall be designated by their nominal bore. These shall be light, medium or heavy as specified depending upon the wall thickness. The standard size and weights of tubes are listed in Appendix C. Hollow sections shall be as per IS 4923. Tubes shall be clean finished and reasonably free from scale. They shall be free from cracks, surface flaws, laminations and other defects. The ends shall be cut clean and square with axis of tube, unless otherwise specified.

b) Fabrication - The component parts of the structure shall be assembled in such a manner that they are neither twisted nor otherwise damaged and be so prepared that the specified cambers, if any, are, maintained. The tubular steel work shall be painted with one coat of approved steel primer after fabrication. All fabrication and welding is to be done in an approved workshop. The joint details shall be generally as per S.P-38 of B.I.S publication.

c) Tubular trusses shall be hoisted and erected in position carefully, without damage to themselves, other structure, equipment and injury to workman. The method of hoisting and erection proposed to be adopted shall be got approved from the Engineer-in-charge. The contractor shall however be fully responsible, for the work being carried out in a safe and proper manner without unduly stressing the various members. Proper equipment such as derricks, lifting tackles, winches, ropes etc. shall be used.

9.1 STAINLESS STEEL WORK:

a. Stainless steel generally shall be Grade 1.4301 (SS 304) or 1.4401 (SS 316), unless otherwise specified in particulars of item. Lower grades shall not be used. Surface finish of all the stainless steel materials will be in 240 grit satin finish / matt finish. All stainless steel material will have to be coated by a solution of Inox to avoid finger in prints and avoidance of settlement of environment / atmospheric dust.

b. Stainless steel railing, both sides in staircase and ramp with double handrail shall be used for barrier free accessibility requirements with adequate SS balusters, runners etc as per approved architectural drawing.

c. Stainless steel railing in balconies, parapets etc. of height not less than 1200 mm shall be used with adequate SS balusters, runners etc. as per approved architectural drawing.

d. Fixing shall be done by stainless steel expansion bolts of approved size and make as per Engineer-in-Charge and welding to be done by using organ welding rods and the surface being duly finished and cleaned by K2 passivation, which is

nitric acid plus floric acid solution treatment by which the chances of corrosion will be eliminated and any burn out makes on the metal will also be eliminated.

e. Stainless steel grade 304 wire gauge with wire of dia 0.50 mm and average width of aperture 1.4 mm in both directions shall be used in wire gauge shutters for doors and windows.

10. **FLOORING**

10.1 All work in general shall be carried out as per **CPWD specifications 2019 (Volume-I)** with up-to-date correction slips.

10.2 Whenever flooring is to be done in patterns of tiles and stones, the contractor shall get samples of each pattern laid and approved by the Engineer-in-charge before final laying of such flooring. Nothing extra shall be payable on this account.

10.3 Different stones / tiles used in pattern flooring shall be measured separately as defined in the nomenclature of the item and nothing extra for laying pattern flooring shall be paid over and above the quoted rate. No additional wastage, if any, shall be accounted for any extra payment.

10.4 Samples of flooring stones/ Tile (Kota/ Marble/ Granite/ Ceramic tiles/ Vitrified tiles etc.) shall be deposited well in advance with the Engineer-in-Charge for approval. Approved samples should be kept at site with the Engineer-in-Charge and the same shall not be removed except with the written permission of Engineer-in-Charge. No payment whatsoever shall be made for these samples.

10.5 The Marble/ Kota/ Granite or any other stone shall be fully supported by the details establishing the quarry and its location.

10.6 Full width Marble/ Kota/ Granite stone over kitchen platform shall be provided which shall not be less than 900mm long except to adjust for closing pieces. The marble / stone flooring in treads and risers of staircase shall not be less than 1500mm long except to adjust the closing pieces. Nothing extra shall be paid on these accounts

10.7 **Vitrified Tile Flooring**

The tiles shall be of approved make and shall generally conform to Table 12 of IS15622.

The full body Vitrified tiles of specified sizes shall be used & sample of tiles shall be got approved from the Engineer-in-Charge. All tiles shall be rectified and double charge minimum. The Mandatory tests for vitrified tiles shall be got done as per CPWD Specifications (volume-1)/relevant BIS Code.

10.8 **Ceramic Tiles Flooring**

The tiles shall be procured from the approved manufactures of the specified shade &colour. The floor & wall tiles shall be conforming to IS:15622 for floor and wall tiles respectively. Tiles for dado shall be 300mm x 450mm (minimum size) or more (GROUP-III) as approved. Tiles for flooring shall be 300mm x 300mm (minimum size) or more (GROUP-V) as approved. Test shall be conducted to satisfy the

quality of material as per CPWD Specifications

10.9 The rate of items of flooring is inclusive of providing sunken flooring in bathrooms, kitchen etc. and nothing extra on this account is admissible. The proper gradient shall be given to flooring for toilets, verandah, kitchen, courtyard, etc. as per the directions of Engineer-in-charge.

10.10 The entire responsibility for the quality of work will however rest with the building contractor only and he shall submit a Guarantee Bond as per Proforma **as per NIT of Part- B.** 10% (ten percent) of the cost of all tile items in addition to normal security deposit of the whole work, would be retained as security deposit and the amount so deducted would be released after Five years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory. If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department.

11. **WATER PROOFING FOR SUNKEN FLOORS**:-

11.1 **GUARANTEE BOND FOR ALL WATER PROOFING ITEMS:-**

Ten years Guarantee bond in prescribed proforma **as per NIT of Part- B** shall be submitted by the contractor which shall also be signed by both the specialized agency and the contractor to meet their liability / liabilities under the guarantee bond. However, the sole responsibility about efficiency of water proofing treatment shall rest with the building contractor. 10% (Ten percent) of the cost of water-proofing work shall be retained as Security Deposit in addition to normal security deposit of the whole work and the amount so deducted would be released after ten years from the date of completion of the entire work under the agreement, if the performance of the treatment is found satisfactory. If any defect is noticed during the guarantee period, the contractor shall rectify it within 15 days of receipt of intimation of defects in the work. If the defects pointed out are not attended to within the specified period, the same will be got done from another agency at the risk and cost of contractor.

12. **FINISHING**:-

12.1 The work shall be done in accordance with **CPWD specifications 2019 (Volume-II)** with up-to-date correction slips and/or manufacturers specifications wherever applicable.

12.2 All painting material of approved brand and manufacturer shall be brought to the site of work in the original sealed containers. The material brought to the site of work shall be sufficient for at least 30 days of work. The material shall be kept under the joint custody of contractor and representative of the Engineer-in-charge. The empty containers shall not be removed from the site till the completion of the work without permission of the Engineer-in-charge.

In the item of finishing walls with water proofing cement paint, only the plain/flat area shall be measured for payment and nothing extra shall be paid on account of pointed wall surface.

13. **SANITARY INSTALLATIONS /WATER SUPPLY / DRAINAGE**:-

13.1 The contractor shall submit schematic drawing of water supply and sanitary installation showing details of layout, including internal water supply and drainage details, showing the detail of water supply lines including fittings diameter wise and fixtures connecting to soil waste through traps and connection of W.C. to main shaft pipe for drainage including its ventilation system for approval of Engineer-in-Charge.

13.2 For the work of water supply and sanitary installations, the contractor shall engage the approved licensed plumbers and submit the name of proposed plumbing agencies with their credentials for approval of the Engineer-in-Charge.

13.3 The work in general shall be carried out as per **CPWD specifications 2019 (Volume-II)** with up-to-date correction slips.

13.4 The tendered rates shall include the cost of cutting holes/cores in walls, floors, RCC slabs etc. wherever required and making good the same for which nothing extra shall be paid.

13.5 The Centrifugally spun cast iron pipe IS: 3989-1984 wherever necessary shall be fixed to RCC columns, beams etc. with rawl plugs of approved quality and nothing extra shall be paid for on this account.

13.6 The pig lead to be used in the jointing should be as per CPWD specifications.

13.7 Nothing extra for providing & fixing CP Brass caps /extension pieces wherever required for CP Brass fittings shall be paid beyond the rates payable for corresponding CP Brass fittings.

13.8 Contractor shall submit all the service drawings of Internal water supply, Sanitary Installation, drainage etc. to Engineer-in-Charge before starting any work or placing any order for any of the services etc. These drawings/layout drawings shall be got approved from Engineer-in-charge before implementation and this shall be binding on the contractor.

13.9 The entire responsibility for the quality of work will however rest with the building contractor only and he shall submit a Guarantee Bond as per Performa **as per NIT of Part- B**. 10% (ten percent) of the cost of these items (excluding fixtures) would be retained as security deposit in addition to normal security deposit of the whole work and the amount so deducted would be released after five years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory. If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department.

13.10 Providing, fixing, testing and commissioning of Hubless Centrifugally cast iron pipes and fittings (Epoxy coated inside & outside) as per ISO: 6594/ IS: 15905 standard and jointing with stainless steel shielded couplings with a double stainless steel bolt and screw housing incorporating a EPDM rubber gasket as per IS: 15905/ ASTM 1277 standard inclusive of all necessary specials like bends, tees, offsets, junctions, cowls, end plug, inspection pipes etc. laid under floor/ fixed on walls and in pipe shafts. The rate shall be including angle supports, hanger, nuts bolts, anchor

fasteners, fixing
clamps/ channels with U-Bolts etc. complete. Hubless cast iron pipes & fitting shall have tested for noise level which shall not be more than 25 dB (A) at 2 L/s.

14. ROAD WORK

a) All roads will be cement concrete roads, as per MORTH specifications (fifth edition), laid over sub grade duly prepared with power roller of required thickness as per design. The edges of roads should be at least 20 cm above the adjoining ground level

b) The work shall be carried out using MORTH Specifications for Road and bridge work (Fifth Revision).

c) The Machine molded kerb stone shall be provided on as per drawings and requirements of this item specified in this bid document.

d) As far as possible cross drainage should be taken under the road and at right angle to it. NP-3 pipes of dia not less than 300 mm and as per design requirement shall provided at a interval of not more than 60 meter with a longitudinal slope as per design slope. At the head of cross drain catch pits of adequate size to collect stones, soil and rubbish and to prevent scour has to be provided. The floor of the catch pit should be deeper than the sill of pipe culvert by at least 0.3 meter.

e) Control of seepage flow below road: whenever seepage flow is expected /likely to exists, or seepage zone is at depth less than 0.9 m from sub grade level, longitudinal perforated pipe drain of adequate dia of PVC in trench filled with filtered material and geo textile shall be constructed to intercept the seepage flow. Necessary arrangement to collect the water from perforated pipe drain and diverting by using pipes of PVC/RCC NP-3 of adequate dia shall be made.

15.0 EPDM Flooring- As per the Specifications specified by the Company

Minimum Requirements

Thickness: - 25mm EPDM

EPDM Thickness: 25 mm (19mm SBR + 6 mm EPDM Top)

Pattern: EPDM - Top

Colour: Multicolour

EPDM FLOORING FOR PLAYGROUND

Sub-Head: Supply, Installation, Testing & Commissioning of Multi-Colour EPDM Seamless Safety Flooring for KV School Playground

15.1 Surface Preparation & Inspection:

- Cleaning, washing, and preparing the existing PCC/IPS sub-base, ensuring it is completely smooth, rigid, structurally sound, free from dust, dirt, grease, oil, loose particles, algae, and moisture.
- Treating any hair cracks or minor surface imperfections using approved epoxy/polymer repair mortar before application of the primer coat.
- Ensuring the sub-base has the required slope/gradient for proper storm water runoff.

15.2 Priming:

- Application of a single-component, moisture-curing polyurethane (PU) primer coat evenly on the prepared dry concrete surface to ensure optimum bonding between the sub-base and the base layer.

15.3 Base Layer (SBR Cushion Layer - 19 mm):

- Supplying and laying an in-situ black Styrene Butadiene Rubber (SBR) granule shock-pad cushion layer of 19 mm thickness.
- Mixing high-grade SBR granules (size 1 mm to 4 mm) with solvent-free, UV-stable polyurethane binder in the recommended ratio by weight using a mechanical mixer.
- Spreading and levelling to the true line and level, compacted using a heated/vibratory hand roller or specialized paving equipment to achieve a uniform 19 mm thickness.

Top Layer (EPDM Wear Layer - 6 mm):

- Supplying and laying an in-situ 6 mm thick virgin EPDM (Ethylene Propylene Diene Monomer) coloured rubber granule wear layer over the cured SBR cushion pad (Total system thickness: 25 mm).
- Mixing pure virgin EPDM rubber granules (size 1 mm to 3.5 mm) having an EPDM rubber polymer content of not less than 20%–22% with aromatic/aliphatic polyurethane binder in the manufacturer's specified ratio.
- Manual trowelling and mechanical rolling to provide a seamless, non-slip, resilient, uniform, and multi-colour patterned surface as approved by the Engineer-in-Charge.

15.4 QUALITY ASSURANCE & TESTING CLAUSES (EPDM FLOORING)

Pre-execution Approvals & Mock-Up:

- Sample Approval: Prior to placing the procurement order, the contractor shall submit physical samples of SBR granules, virgin EPDM granules, PU binder, and a complete 25 mm thick sample board (size 300 mm × 300 mm) displaying the proposed colour patterns for written approval of the Engineer-in-Charge.
- Mock-Up Panel: The contractor shall construct an on-site mock-up trial patch of minimum 2.0 m × 2.0 m to demonstrate material finish, bond strength, seam joints, colour fastness, and workmanship. Execution shall commence only after the trial mock-up is formally approved by the Engineer-in-Charge.

15.5 Material Specifications & Compliance Standards:

Virgin EPDM Rubber Granules: Must be 100% virgin peroxide-cured EPDM (not recycled/shredded rubber) with minimum 20% polymer content, specific gravity between 1.4 to 1.6 g/cm³, tensile strength ≥ 4.5 N/mm^2, and elongation at break $\geq 400\%$.

Binder: Moisture-curing, solvent-free MDI-based polyurethane binder specifically formulated for athletic rubber surfacing.

Total Thickness: Strictly 25 mm (19 mm SBR base cushion + 6 mm EPDM wear layer). Any core-cut sample showing a thickness less than 25 mm shall be liable for rejection or proportional recovery.

Sub-base Moisture Limit: Surface moisture of the underlying concrete/PCC must not exceed 4% at the time of laying (to be verified using a digital moisture meter).

15.6 Mandatory Testing from Approved Laboratory:

The contractor shall get mandatory tests conducted through an IIT, NIT, or NABL-accredited test laboratory (or provide original Manufacturer Test Certificates with third-party verification) at their

own cost.

Key tests to be certified include:

- Tensile Strength and Elongation at break (as per ASTM D412 / DIN 53504).
- Hardness (Shore A: 55 to 65 as per ASTM D2240).
- UV Ageing & Weather Resistance (no discoloration or embrittlement after 1000 hours UV exposure test as per ASTM G154 / ISO 4892).
- Critical Fall Height (CFH) / Impact Attenuation (conforming to EN 1177 / ASTM F1292).
- Friction / Skid Resistance (as per BS EN 13036-4 / ASTM E303).

15.7 Special Guarantee Bond & Defect Liability:

Five (05) Years Performance Guarantee: The contractor shall submit a formal Guarantee Bond on non-judicial stamp paper of ₹100 for a period of 5 (five) years from the certified date of completion. The guarantee shall cover peeling off, de-bonding from the sub-base, joint opening, granule loss (frictional shredding), surface depressions, cracks, and premature fading/chalking of colours.

Withholding / Security Deposit: As provided in the tender conditions for specialized flooring works, 5% of the cost of the EPDM flooring item shall be retained as additional security deposit for 5 years, or released against an equivalent Bank Guarantee valid for 5 years.

Rectification Window: In case of any defect noticed during the guarantee period, the contractor shall rectify the same within 7 days of notice, failing which the University will execute the repairs through a third party at the contractor's risk and cost.

JURISDICTION OF COURT

Courts at Ajmer/Jaipur shall have the jurisdiction to decide any dispute arising out of or in respect of this contract.

ROFORMA FOR TESTS CARRIED OUT

NAME OF THE WORK :
AGREEMENT NO. & DATE :

Sl. No.	Item	Quantities as per agreement	Frequency as per specification	No. of tests require	R.A. bill No.	Upto date quantity	No. of tests required	No. of tests actualy done	Remarks
1	2	3	4	5	6	7	8	9	10

Signature of Contractor

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF SANITARY INSTALLATIONS / WATER SUPPLY / DRAINAGE WORK.

The agreement made this..... day of ..... (Two Thousand .....only) ..... between .....S/o .....(hereinafter called the GUARANTOR of the one part) and the PRESIDENT OF INDIA (hereinafter called the Government of the other part)

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated ..... and made between the GUARANTOR OF THE ONE PART AND the Government of the other part, whereby the contractor inter alia, undertook to render the work in the said contract recited leak proof with sound material and workmanship.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable, leak proof and guaranteed against faulty material and workmanship, and finishing for five years from the date of completion of work.

NOW THE GUARANTOR hereby guarantee that work executed by him will be free from any leakage, seepage, cracks in pipes and guaranteed against faulty material and workmanship improper slope, defective galvanizing etc. for Five years to be reckoned from the date of completion of the work.

The decision of the Engineer-In-Charge with regard to nature and cause of defect shall be final.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect to satisfaction of Engineer-in-charge at his cost and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to make good all defects or commits breach there under, then the guarantor will indemnify the principal and his successor against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and or cost incurred by the Government, the decision of the Engineer-in-charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator ....and ..... by..... for and on behalf of the CENTRAL UNIVERSITY OF RAJASTHAN on the day, month and year first above written.

SIGNED, sealed and delivered by OBLIGATOR in the presence of :-

1. ..... 2. .....

SIGNED FOR AND ON BEHALF OF THE Central University of Rajasthan BY..... in the presence of :-

1. ..... 2. .....

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF ALUMINIUM DOORS, WINDOWS VENTILATOR WORK,

The agreement made this..... day of ..... (Two Thousand …… only)..... between .....S/o ..... (hereinafter called the GUARANTOR of the one part) and the Central University of Rajasthan.

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated ..... and made between the GUARANTOR OF THE ONE PART AND the Government of the other part, whereby the contractor inter alia, undertook to render the work in the said contract recited structurally stable, workmanship, powder coating, anodizing, colouring and sealing etc.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable and guaranteed against faulty material and workmanship, defective anodizing/ powder coating for five years from the date of completion of work.

NOW THE GUARANTOR hereby guarantee that work executed by him will remain structurally stable and guaranteed against faulty material and workmanship, defective anodizing/ powder coating for five years to be reckoned from the date of completion of the work.

The decision of the Engineer-In-Charge with regard to nature and cause of defect shall be final.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect to satisfaction of Engineer-in-charge at his cost and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to make good all defects or commits breach there under, then the guarantor will indemnify the principal and his successor against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and or cost incurred by the Government, the decision of the Engineer-in-charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator ....and ..... by..... for and on behalf of the CURAJ on the day, month and year first above written.

SIGNED, sealed and delivered by OBLIGATOR in the presence of:-

1. ..... 2. .....

SIGNED FOR AND ON BEHALF OF THE PRESIDENT OF INDIA BY..... in the presence of:-

1. ..... 2. .....

Annexure –I

LIST OF PREFERRED MAKES FOR CIVIL WORKS

Name of work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

S.No	Material	List of Preferred Make
1.	(i) Ordinary Portland Cement / Portland Pozzolona Cement.	ACC, Ultratech, Ambuja Cement, J.K. Cement,Wonder Cement
	(ii) White Cement	Birla White, J. K. White, Shree Cement
2	Reinforcement Steel (A) TMT Reinforcement Bars	SAIL, Tata Steel, RashtriyaIspat Nigam Ltd (RINL), JSW Steel Ltd., Jindal Steel & Power Ltd.
	(B) Corrosion Resistant Steel (CRS) Reinforcement Bars	SAIL CRS , Tiscon CRS of Tata Steel, CRS VIZAG from RashtriyaIspat Nigam Ltd (RINL), JSW Neo CRS from JSW Steel Ltd.,
3.	Water Proofing Compounds, Admixtures, Plasticizer, Super Plasticizer, Curing Compounds	Fosroc, ROFF/Dr. Fixit(Pidilite Industries), CICO, Sika, BASF, Ardex Endura (Bal Endura), NerolacPerma, MYK Arment
4.	Integral Water proofing compound with cement (For Plaster & Mortar)	Fosroc, Conplast 421 Dr. Fixit : LW+, Sika : Sikacim, & equivalent product of BASF, CICO, Ardex Endura, Nerolac-Perma, Asian Paints, Shalimar(STP), UltraTech, MYK Arment
5.	Water proofing for bathroom/ toilet/ balcony & other wet areas	Fosroc : Brush Bond/Brushcrete, CICO :Tapecrete, Dr. Fixit : Pidifin 2K, Sika : Nito Bond, Asain Paints : Damp Block 2 K & equivalent product of BASF, Ardex Endura, Nerolac-Perma, Shalimar(STP), UltraTech, MYK Arment
6.	Crystalline water proofing compound	Fosroc : Fosroc Crystalline
		Dr Fixit : Dr. Fixit Crystalline
		Sika : Sika Crystalline
		Asian Paints : Crystalline Quart, MYK Arment, Aqua Aum C-35
		& equivalent product of BASF, CICO, Ardex Endura, Pentron, Nerolac-Perma

7.	Grouts, Tile Adhesive	Latecrete,BASF, Ardex Endura, Ferrous Crete, Pidilite, UltraTech, Oswal Industries
8	Stone Adhesive	Pidilite - Fevimate excel, BASF, Ardex Endura, MYK Laticrete, Oswal Industries
9A	Structural Steel	SAIL, Tata Steel, RashtriyaIspat Nigam Ltd (RINL), and JSW Steel Ltd., Jindal Steel & Power Ltd
9B	Structural Steel (For Angle, T-Section, etc. below 50mmx50mmx4mm)	SAIL, Tata Steel, RashtriyaIspat Nigam Ltd (RINL), and JSW Steel Ltd., Jindal Steel & Power Ltd,
10	Polycarbonate Sheet	GE Plastic, LEXAN, Bayers
11	Profile steel sheet/Deck Steel Sheets	TATA Bluescope, JSW, Eversandai, Jindal
11(A)	Sandwich Profile panel	Kingspan, Lloyd, Metclo (Note : Profile steel sheet should be of make Tata/Jindal/JSW).
12	Particle Board	Action TESA, Greenlam, Merino
13	Laminates	Action TESA, Greenlam, Century Ply, Merino, Sunmica
14	Flush door shutters	Duro, Century, Durian, Green ply, Jaindoors Pvt. Ltd.
15	Fire Rated Doors	Signum Fire Protection, Shakti Metdoor, NAVAIR, Sukri, Promat International, Bhawani Fire, Jaindoors,
16	False Ceiling System Metalic, Mineral fiber, Gypsum, GRG	Armstrong, Hunter Douglas, Saint Gobain, Aerolite, Durlum, Gyproc, Diamond ceiling
17	Plywood/ Veneer	Green ply, Greenlam, Century, Merino, Duro, Durian
18	Melamine Polish	Asian Paints Melamine Gold, Wudfin of Pidilite, Timbertone of ICI Dulux.
19	Floor Spring & Door Closure	Godrej, Dorma, Dorset, Kich, Hafele
20. (a)	Aluminium Section	Hindalco, Jindal, Indian Aluminium co.
20. (b)	AnodisedAluminium Hardware (Heavy Duty)	Kilong, Alualpha, Classic, Ebco
21	Clear/Float/Frosted/Toughened Glass/ Refractive Glass	Saint Gobain, AIS, Modiguard, Ashai Float.
22	Stainless Steel Railing, Accessories etc.	JINDAL, Dorma, Kich, GEZE, Godrej, Dorset

23	S.S. Door & window & Fittings	Dorma, Kich, Dorset, Godrej, Hafele
24	Silicon based water repellant /Weather Sealant	G.E. Plastics, Dow Corning, Wacker, BASF, Pidilite (Dr. Fixit/Roff), Nerolac-Perma
25	Poly-Sulphide Sealant	Fosroc, Pidilite (Dr. Fixit/Roff), Sika, BASF, Nerolac-Perma
26	Mosaic tiles/ Chequered Tiles	Ultra Tiles, NITCO, Hyper(Mayur), Pavcon, Oswal, Swastik, Oswal Industries
26.	Fire door Hardware	Hafele, Dorma, GEZE, Ingersol raid
27	Ceramic Tiles	Kajaria, Somany, Johnson, AGL, Orient bell
28	Vitrified Tiles (Satin/Matt/Glazed finish)& Paver Tiles	Kajaria, Somany, Johnson, Restile, AGL, Orient bell
29	Paver block & Kerb Stone	Pavcon, AkshayInfrasys, Marudhara, Hyper Tiles/Dynamic Industries/ Mayur, Oswal Industries
30	Dash / Anchoring Fasteners	HILTI, Fischer, Bosch, Wurth.
31	Cement Based Wall putty	Birla wall care, JK White, Berger, Asian Paints
32	Oil Bound Washable Distemper / Dry Distemper	Asian Paints : Professional Acrylic Distemper, Nerolac: Beauty Acrylic Distemper, Berger : Bison Acrylic Distemper, AkzonobelDULUX : Maxilite
33	1st Quality Acrylic Distemper (washable/Ready mix/ Low VOC)	Asian Paints : Tractor Aqua Lock Paint, Berger : Commando or equivalent paints of Nerolac or Akzonobel DULUX
34	Acrylic Emulsion Paints	Asian Paints : Professional Premium Interior Emulsion Paint, Nerolac : Beauty Gold, Berger : Rangoli total care, AkzonobelDULUX : Akzonobel Dulux Professional Solitaire A1000
35	Plastic Emulsion Paint	Asian Paints : Apcolite Heavy Duty Premium Emulsion Paint, Nerolac : Impression, Berger : Easy Clean, Akzonobel DULUX : Akzonobel Dulux Professional Solitaire Stain Resist

36	Premium Acrylic Emulsion Paints (Interior)	Asian Paints : Royale Luxury Emulsion, Nerolac : Impression , Berger : Silk, Akzonobel Dulux : Akzonobel Dulux Velvet Touch
37	Textured Exterior Paint	Asian paints, Nerolac, Berger Paints, Ultratech Paints, Luxture, Akzonobel Dulux
38	Acrylic Smooth Exterior Paint	Asian Paints : Apex/ Professional Premium Exterior Emulsion, Nerolac : XL,Berger : Weather Coat, Akzonobel Dulux : Professional Weathershield
39	Premium Acrylic Smooth Exterior Paint with Silicon additive.	Asian Paints : Apex Ultima Nerolac : XL Total Berger : Weather Coat all guard Akzonobel Dulux : Professional Ultra Clean
40	Synthetic Enamel Paint	Asian : Apcolite Premium gloss enamel, Nerolac : Synthetic Hi gloss Berger : Luxol Hi gloss Akzonobel Dulux : Akzonobel Dulux Gloss
41	Cement Primer	Nerolac, BP White(Berger), Decoprime WT(Asian), White primer (ICI)
42	Steel Primer(Red Oxide Zinc Chromate Primer)	Asian Paints, Nerolac, Berger, ICI
43	Wood Primer	Asian Paints (Wood Primer - White/Pink), Berger, ICI, Nerolac,
44	Epoxy Paint	Asian, Nerolac, Berger, ICI, Kansai Akzo Nobel
45	Fire Paint	Caboline, Akzo Nobel Coatings India Ltd., PROMAT, Jotun, Asian Paints, Berger
46	G.I. / M.S. Pipe	Tata, Jindal (Hisar)
47	G.I. Fittings	Unik, AVR, Zoloto, UCO
48	HDPE Pipes	Reliance, JainPipes, ORIPLAST, Supreme
49	DI PIPES	Electrosteel, Jindal, TATA DUCTURA, Kapilansh, Kesoram, NECO
50	DI Fittings	Electrosteel, Jindal, TATA DUCTURA, Kapilansh, Kesoram, Neco
51	UPVC pipe and Fittings	Astral, Supreme, Ashirwad, Finolex

52	Centrifugally Cast (spun) Iron Pipes & Fittings	NECO, Kapilansh, SKF
53	C.I. Manhole covers, frames & GI Gratings	NECO, RAJ Iron Foundary Agra, BIC, Kapilansh
54	SFRC Manhole covers & gratings	KK, JAIN, PARGATI
55	CP Brass Fittings (Superior Range)	Jaquar, Grohe, Roca, kohler
56	CP Brass Fittings (Normal Range)	Jaquar, CERA, Hindware, Roca
57 (a)	Sanitary ware, Fittings & accessories (Superior Range)	Jaquar, Kohler, Roca, CERA
57 (b)	Sanitary ware, Fittings & accessories (Normal Range)	Jaquar, Hindware, CERA, Roca
58	Mirror Glass	Atul, Modi Guard, Jaquar, CERA
59	CPVC Pipe & fitting	Astral, Supreme, Finolex
60	Stainless Steel Sink	Neelkanth, Niralli, CERA
61	RCC Pipes (NP-2)	Lakshmi, Sood&Sood, Jain Pipe Co. (Newai), Mahaveer Enterprises (Newai),Work well spun pipes, Pali.
62	UPVC Doors & Windows (PROFILE makers & their authorized Fabricators only)	Fenesta, KOMERLING, RHEAU, Aluplast, VEKA.
63	Extruded Polystrene Insulation Board	Dowcorning, Supreme, Texas, Analco
64	Heat Resistant Tiles	Johnson, Swastik, Thermatek, Oswal
65	Gypsum Plaster	Ferrous Crete, Gyproc Saint Gobain, Boral, UltraTech-Birla white, JK lakshmi
66	Floor hardener	Ironite, Ferrok, Hardonate
67	Modular Expansion Joint	Herculus, Sanfield India Ltd. Vexcolt, Tristar
68	Glass Wool	Dow Corning, U.P. Twiga, Isover
69	UPVC doors and window hardware	Rotto, Dorset, Kinlong, Dorma
70	AAC Block Adhesive	Xtralite, Orifix, Ardex Endura, Ferrous Crete, UltraTech, MYK haticte

71	AAC Block	UltraTech, Orilite, Magicrete, HIL-Aerocon,seporex (Buildtex)
72	Stone Polymer Composite tile Flooring	Welspan, Fundermax, Egger
73	Artificial/Synthetic Grass	Welspan, Floortex, Matrix turf

*** Batch test certificate of Paints and Primer shall be supplied along with each lot.**

LIST OF PREFERRED MAKES FOR ELECTRICAL WORKS

S. No.	Details of Materials / Equipment	Manufacturer's Name / Make
A.	INTERNAL EI	
1.	MCB, Isolator, Industrial Plug Socket, RCCB, RCBO's	Schneider Electric ACTI-9 (N) / Legrand (DX3) / Hager / L&T (Exora) / C&S (Win Trip 1/2) / ABB (S200M) / Siemens (Betaguard) / MK (Honeywell)
2.	MCBDB & Loose Wire Box	Legrand (EKINOX-3) / L&T (EXORA) / C&S (Win Class) / Hager (Novello) / Schneider (ACTI-9) / ABB (Elegance) / Siemens / MK (Honeywell) *(Note: MCBs Make shall be same as DBs Make)*
3.	Change Over Switches	L&T / Havells / HPL / Hager / C&S / Socomec / ABB / ASCO
4.	Automatic Transfer Switch (ATS)	ASCO (Schneider) / Russel / Socomec / Hager / ABB / Legrand / L&T / Havells
5.	FRLS PVC insulated copper conductor single core cable for wiring (ISI marked)	Finolex / RR Kabel / KEI / Havells / Polycab / Bonton / Grandlay
6.	Armoured / Unarmoured telephone cable, Coaxial Cable / LAN Cable	Delton / Finolex / RR Kabel / Polycab / Havells / Bonton / Grandlay / KEI
7.	MS Conduit (ISI Marked) with heavy duty MS conduit pipe accessories	BEC / NIC / AKG / RMCON *(Note: The make of accessories will be same that of conduit pipe & will comply to IS / 4768 part 2 2003)*
8.	PVC Conduit (ISI Marked) with heavy duty PVC conduit pipe accessories	AKG / Norpack / BEC / Polycab / Precision / Astral / Finolex / Pressfit
9.	Modular Switch, Socket / Telephone Socket / Cable TV Socket / Data outlet Socket / Fan Regulator / G.I. Boxes Etc.	Legrand (Arteor) / Schneider Electric (Zencelo) / Honeywell-MK (Elements)
10.	Modular MCB	Legrand / Schneider Electric / MK-Honeywell
11.	Selector Switch & Toggle switch	Salzer (Larsen & Toubro) / Siemens / Kaycee / C&S / Schneider
12.	PVC Trunking	MK (Honeywell) / Legrand / Schneider
13.	GI pipe (ISI Marked)	Tata / Jindal (Hissar) / SAIL
14.	Paints	Asian / Berger / Dulux
15.	Terminal Blocks and Connectors	Elmex / Wago / Hensel / Connectwell
16.	Phenolic Laminated Sheet / Bakelite	Hylam / Formica (P-I Grade) / Mylam /

	Sheet	Greenlam
17.	Cat-6 / Cat-6A Cable, Wires & Fiber Optic Cable	AMP / Belden / Legrand / Krone Communication / Molex
18.	Indoor and Outdoor LED fittings / LED Lamp / LED Tube	Wipro / Philips / Trilux / Regent / Osram / Lighting Technology (LT)
19.	Decorative Indoor / Outdoor LED fitting	Wipro / Philips / Trilux / Regent / Osram / Lighting Technology (LT) / Bajaj / Havells / Crompton
20.	Exhaust Fan / Fresher Fan	Havells / Crompton Greaves / USHA / Almonard / Alstom
21.	BLDC Ceiling Fan	Havells / Crompton Greaves / Atomberg Gorilla / Superfan / Usha
22.	Wall Bracket Fitting	Havells / Wipro / Decon / Jaquar / Philips / Bajaj / Trilux
23.	Geysers	Racold / CG / Havells / Jaquar / A.O. Smith / Usha / Venus
24.	Air circulator / Wall Fan	Havells / Usha / Almonard / Crompton / Orient
25.	LED Street Lights with inbuilt Solar Panel & Controller	Havells / Crompton / Philips / Wipro / Bajaj
26.	Ornamental Pole (Factory Finish) / Hot Dipped Galvanized Octagonal Pole / High Mast	Valmont / Philips / Crompton / Wipro / Bajaj / Keselec / Singh Profile / Transrail
27.	Hot Dipped Galvanized Octagonal Pole / High Mast	Valmont / Philips / Crompton / Wipro / Bajaj / Keselec / Singh Profile / Transrail / Utkarsh
28.	Polycarbonate Junction Box / Enclosure / Pole box	Hensel / Spelsberg / Neptune-Bals / Sintex / Standard
B.	POWER CABLE	
1.	XLPE insulated PVC sheathed Alum. / Copper Conductor Armored cable of 1.1 KV grade	Finolex / Polycab / KEI / Havells / Grandlay / RR Kabel / Bonton / LAPP / RPG
C.	HT CABLE	
1.	H.T. cable (ISI marked)	Finolex / CCI / Polycab / KEI / Havells / RR Kabel / Grandlay / LAPP / RPG
D.	SUB STATION EQUIPMENT	
1.	LT Panel / Meter Panel Board / Outdoor Feeder Pillar / APFC Panels (Above 200 Amp Incomer)	Tricolite Electrical Industries / Control & Switchgears Electrical Ltd. / Sterling & Wilson / Milestone / Adlec Control System Pvt. Ltd. / Advance Panels & Switchgear Pvt. Ltd. Haridwar / BSPL (Bhopal) / Engineers & Engineers (Electricals) Pvt. Ltd. / Peaton Electrical Co. Ltd. / Dynamic Electropower Pvt. Ltd. / Pristine / Neptune / Pyrotech India Electronic Pvt. Ltd. Udaipur
2.	LT Panel / Meter Panel Board / Outdoor Feeder Pillar / APFC Panels (Upto 200 Amp Incomer)	Tricolite Electrical Industries / Control & Switchgears Electrical Ltd. / Sterling & Wilson / Milestone / Adlec Control System Pvt. Ltd. / Advance Panels & Switchgear Pvt. Ltd. Haridwar / BSPL

		(Bhopal) / Engineers & Engineers (Electricals) Pvt. Ltd. / Peaton Electrical Co. Ltd. / Dynamic Electropower Pvt. Ltd. / ASPL (Associated Switchgears & Projects Ltd.) / Pristine / Neptune / Allied Engineers / Pyrotech India Electronic Pvt. Ltd. Udaipur / Johns Electric Co. Pvt. Ltd. Jaipur
3.	Rising Main / Bus Trunking	C&S / L&T / Schneider / Legrand / Godrej
4.	Moulded Case Circuit Breaker (MCCB) Thermal Release / Microprocessor based (Ics=Icu=100%)	Schneider Electric (CVS Series) / Siemens (VL Series) / L&T (D-Sine) / Legrand (DPX3) / C&S (Winbreak 1/2) / ABB (TMax) / Hager
5.	Contactor / Relay / Timer	Schneider Electric / L&T / BCH / Siemens / Legrand / ABB / C&S / Hager
6.	Potential Transformers / Current Transformer	Automatic Electric / Matrix / Precise / L&T / Kappa / Procom
7.	LED type indicating lamps / Push Button	Schneider Electric / L&T / Siemens / Vaishno
8.	Digital Meters (A/V/PF/Hz/KW/KWH)	Conzerv / Larsen & Toubro / Secure / AE / Socomec / Neptune / Hager
9.	Fasteners / GI Clamps	Hilti / Fischer / Chilli / OBO
10.	D.W. Corrugated HDPE Pipe (ISI marked)	REX / Dura Plast / Zenduct / Gemini (Tirupati) / Duraline / Keshav Kripa Polyplast (LLP)
11.	Transformer (Oil / Dry type) Upto 250 KVA	Crompton / ABB / Raychem / Schneider / Voltamp / Uttam Bharat / United / Bharat Bijlee / RTS-Jaipur
12.	Transformer (Oil / Dry type) Above 250 KVA	Crompton / ABB / Schneider / Sterling & Wilson / Raychem / Bharat Bijlee / Voltamp
13	HT Panel / Ring Main Unit	Siemens / ABB / L&T / Schneider / C&S

Note:

1. The Contractor shall obtain approval from the Engineer-In-Charge before placing order for any specific material or engaging any of the specialized agencies wherever applicable.
2. The Engineer-In-Charge may approve any material equivalent to that specified in the tender subject to proof being offered by the Contractor for equivalence tohis satisfaction.
3. Unless otherwise specified, in the tender document all the materials which are ISI Marked shall be used in the work and if the ISI marked materials are not available, materials conforming to IS shall be used, and for the materials which are neither ISI marked nor conform to IS, the manufacturer's Specification shall be followed.
4. Wherever makes and models have been specified in BOQ, the agency has to supply them, in such case list of preferred makes shall not be applicable.

CENTRAL UNIVERSITY OF RAJASTHAN

Name of work: Construction of Truss & Development of Playground for KV School at Central University of Rajasthan.

PART-C

(SCHEDULE OF QUANTITY)

CENTRAL UNIVERSITY RAJASTHAN						
Name of the work- Construction of KV School Truss and Development of Playground						
S.NO	**DSR 2023**	**DESCRIPTION OF ITEMS**	**Unit**	**Rate**	**Quantity**	**Amount**
1	2.8	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 min width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
2	2.8.1	All kinds of soil.	CUM	260.30	846.11	220243.02
3	2.26	Extra for every additional lift of 1.5 m or part thereof in excavation /banking excavated or stacked materials.				
4	2.26.1	All kinds of soil	CUM	126.80	157.25	19939.05
5	2.10	Excavating trenches by mechinical / manual means of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, for all depth, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m :				
6	2.10.1	All kinds of soil				

7	2.10.1.2	Pipes, cables etc. exceeding 80 mm dia. But not exceeding 300 mm dia	CUM	352.15	108.00	38032.20
8	2.25	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 and for all lift.	CUM	196.00	562.75	110299.60
9	2.28	Surface dressing of the ground including removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
10	2.28.1	All Kind of Soil	SQM	34.15	1482.00	50610.30
11	4.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :				
12	4.1.3	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	CUM	7878.50	170.52	1343476.49
13	5.22	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level.				
14	5.22.6	Thermo-Mechanically Treated bars of grade Fe-500D	KG	107.85	15751.49	1698798.35
15	5.9	Centering and shuttering including strutting, propping etc. and removal of form for				
16	5.9.1	Foundations, footings, bases of columns, etc. for mass	SQM	392.15	196.80	77175.12
17	5.9.5	Lintels, beams, plinth beams, girders, bressumers and	SQM	736.40	64.88	47777.04

18	5.33	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge, for the following grades of concrete.: Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 110% of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.				
19	5.33.1	All works upto plinth level				
20	5.33.1.1	Concrete of M25 grade with minimum cement content of 330 kg /cum	CUM	9504.75	112.84	1072476.83
21	5.35	Add for using extra cement in the items of design mix over and above the specified cement content therein.	Quintal	733.50	41.75	30623.09

22	6.1.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
23	6.1.2	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	7132.25	13.44	95841.39
24	10.16	Steel work in built up tubular (round, square or rectangular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete.				
25	10.16.1	Hot finished welded type tubes	KG	194.40	6383 7.90	12410087.81
26	10.20	Providing and fixing bolts including nuts and washers complete.	KG	159.35	130.8 3	20848.08
27	10.27	Providing and fixing carbon steel galvanised (minimum coating 5 micron) dash fastener of 10 mm dia double threaded 6.8 grade (yield strength 480 N/mm2), counter sunk head, comprising of 10 mm dia polyamide PA 6 grade sleeve, including drilling of hole in frame , concrete/ masonry, etc. as per direction of Engineer-in-charge.				
28	10.27.1	10 x 160 mm	METER	224.50	64.00	14368.00
29	12.1	Providing corrugated G.S. sheet roofing including vertical / curved surface fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead, including a coat of approved steel primer and two coats of approved paint on overlapping				

		of sheets complete (up to any pitch in horizontal/ vertical or curved surfaces), excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.				
30	12.1.3	0.63 mm thick with zinc coating not less than 275 gm/ m²	SQM	1087.65	1253.15	1362993.71
31	12.7	Providing and fixing 15 cm wide, 45 cm overall semi-circular plain G.S. sheet gutter with iron brackets 40x3 mm size, bolts, nuts and washers etc., including making necessary connections with rain water pipes complete.				
32	12.7.2	0.63 mm thick with zinc coating not less than 275 gm/m²	METER	944.05	114.00	107621.70
33	12.41	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ringconforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes.				
34	12.41.2	110 mm diameter	METER	377.44	192.00	72468.48
35	12.68	Providing and fixing transparent/translucent/opaque, thick, multiwall polycarbonate sheet, colour as required, such as red, green, blue, brown etc., UV co-extruded and UV resistant on both sides, having multiwall sheet coating of not less than 0.60 to 2.05 kg/sqm weight, approved by the Engineer-in-Charge. Light transmission from transparent to fluorescent translucent varieties of sheet shall be from	Sqm	978	200	195600.00

		30% to 80% and shall be decided by the Engineer-in-Charge as per requirement. The panel shall be tested for impact resistance and shall satisfy the above value of 5 Joules and impact resistance up to 60 J, and shall conform to fire rating of Class V-0 as per UL-94 or Class V-0 as per IS 4434:2023 or ASTM D635 classification, or equivalent fire classification as per EN 13501.The yellowness index, when tested as per ASTM E313, shall be less than or equal to 2 or shall be equivalent to ASTM D2244.The light transmission rate after UV exposure for 1000 hours shall not be less than 80% as per ASTM D4329 or equivalent.The multiwall polycarbonate light panel shall be fixed to tubular steel structure with aluminium section of size 60 × 40 mm, anodised 25 micron thick and not less than 0.462 kg/metre weight.Weatherproof EPDM/Neoprene rubber gasket shall be fixed on both sides of the joints to make the whole structure watertight as per approved design/drawings. The joints on both sides of the polycarbonate sheets shall be fixed with aluminium weatherproof neoprene profile and sealed with silicone sealant to make the joints fully watertight. The overhead open sheet shall be sealed with anodised aluminium profile. The aluminium channel/profile shall be of panel size 60 × 40 mm and thickness not less than 1.0 mm. The polycarbonate sheet				

		shall be fixed to MS framed structure with self-drilling/self-tapping screws, 55 mm long, fixed at 900 mm centre to centre. The rate shall include the cost of all materials involved, such as polycarbonate sheet, aluminium channel/profile, EPDM/Neoprene gasket, sealant, self-tapping screws, bolts and any other material required for fixing the sheet. The fixing cost of steel work, which shall be separately paid, and sheets in position shall be included in the rate. The rate shall also include the cost of scaffolding required and all tools, plant and equipment necessary for execution of the work. The entire work shall be executed as per approved design/drawings and directions of the Engineer-in-Charge.				
36	12.68.1	10 mm thick and U- value not morethan 2.50 Wm2K				
37	13.1	12 mm cement plaster of mix :				
38	13.1.2	1:6 (1 cement: 6 fine sand)	SQM	333.35	70.11	23371.17
39	13.26	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	SQM	262.7	70.11	18417.90
40	13.61	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :				
41	13.61.1	Two or more coats on new work	SQM	155.9	1707.41	266184.68
42	16.69	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the	Cum	10117.60	14.72	148880.48

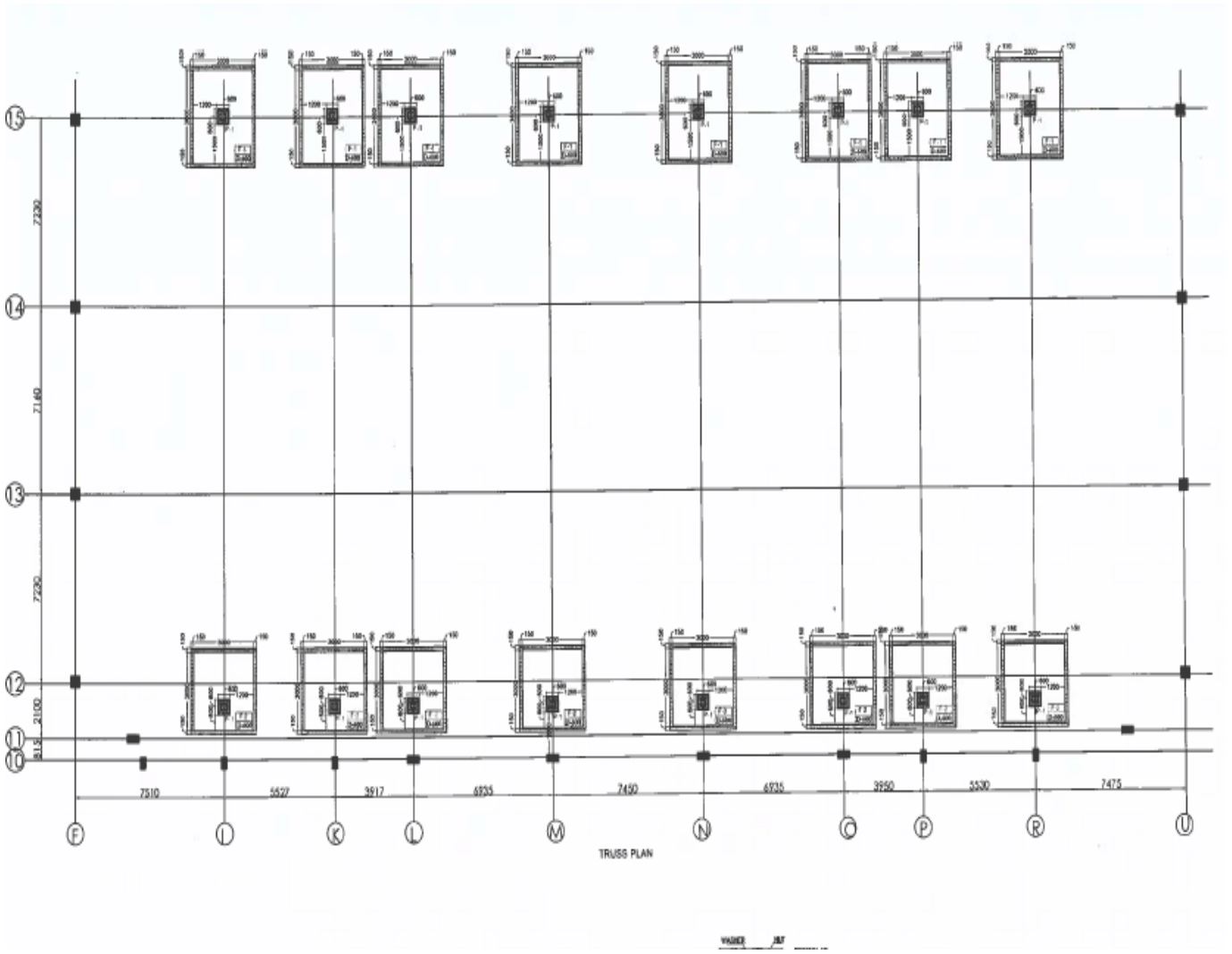
		required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-charge).				
43	18.33	Constructing masonry Chamber 60x60x75 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:1.5:3 mix (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size), including necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :				
44	18.33.1	With common burnt clay F.P.S.(non modular) bricks of class	EACH	10862.4	2.00	21724.80

45	19.6	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
46	19.6.3	250 mm dia. R.C.C. pipe	METER	899.8	108	97178.40
47	MR	Supply and fixing of EPDM Flooring	SQM	2285	1456	3326960.00
48	Approx. Market Rate	Supply of Geared Motor HVLS Fan of 24 feet (7.3 m) diameter with min. 05 aero blades of high grade aluminium alloy, 03 phase geared induction motor of 1.1 kW max. power, variable speed, IP 55 protection rating, 13000 CMM, 0-55 RPM, sound level at 03 meter below the fan< 65 db, insulation class 'F', gearbox and VFD controller, fixing arrangements, accessories and safety ropes etc.; suitable for 03 phase 415 V, 50 Hz AC power supply as per standard practice and directions of EIC. Warranty: Minimum 01 year on site.	Each	200000	2	400000.00
49	Approx. Market Rate	Installation, Testing and Commissioning of Geared Motor HVLS Fan of 24 feet (7.3 m) diameter alongwith all accessories and safety ropes, working height arrangements etc. as required on site as per standard practice and directions of EIC.	Job	12000	2	24000.00
50	Approx. Market Rate	Supplying and laying of 4*2.5 sqmm copper conductor flexible pvc cable in pvc conduit between VFD Controller and Fan alongwith connections etc. complete in all respects as	Mtr.	200	100	20000.00

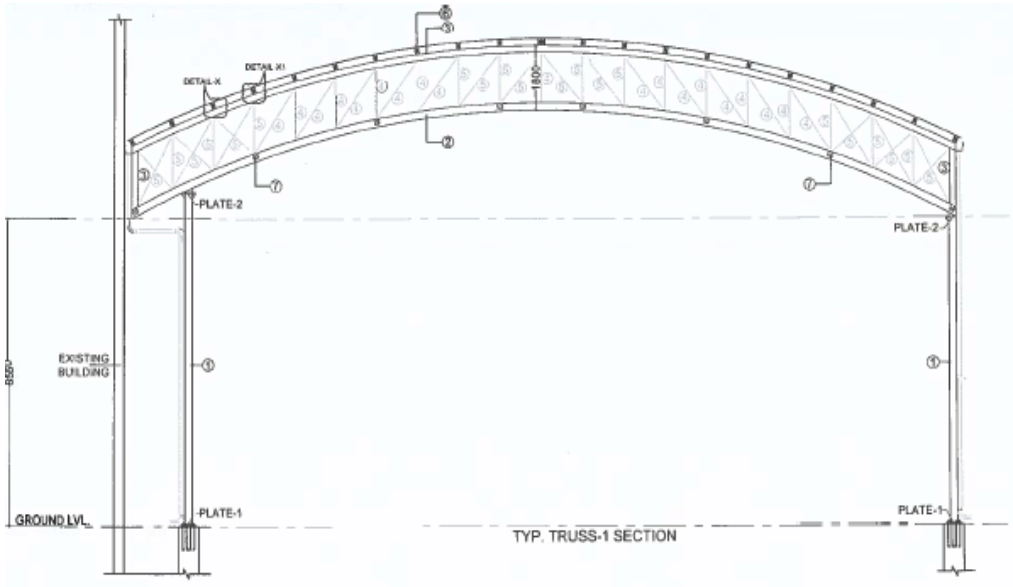
		required on site, as per standard practice and directions of EIC.				
51	DSR E&M 2025	LED Flood Light, powder coated pressure die cast aluminium (System lumen efficacy ≥105 85%, Input voltage: Input voltage: 140-270 Volt AC, frequency 50/60 hz, Operating temp range -5 0C to 50 0C, internal surge protection of 5 KV L,N,E as per IEC 61000-4-5, Driver efficiency >85%,THD < 10% as per IEC 61000-3-2, P. F.≥0.95, IP-66,IK-10, CRI >70, under voltage and over voltage protection, EMI-EMC as per CISPR -15, lenses for beam angle 30 deg-120deg as per the application and the project requirement., suitable tilt able fitting, life time (LED, Driver & electrical circuitry) of minimum 50000 Burning Hours with 70% of initial Lumen maintained till life ends as per LM80 extrapolation IES TM-21-11 report, CCT 3000°K / 4000°K / 5700°K /6500°K (As per ANSI Bin) , SDCM(Standard Deviation Color Matching) <5, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard complete in all respect i/c external connections with 1.5 sq mmFRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy ≥105 <120 lm/Watt output .LM79 & LM80 Test report and all testing required for LEDfixtures as per				

		BIS shall be submitted.. Shape size and CCT shall be as pproved by Engineer-inCharge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C).				
52	8.15.4	150 watt	each	3166	20	63320.00
53		Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required				
54	1.10.3	Group C	each	1704	20	34080.00
55		Supplying and fixing Cable End Box (Loose Wire Box) suitable for following triple pole and neutral, sheet steel, MCB distribution board, 415 Volts, on surface/ recess, complete with testing and commissioning etc.as required.				
56	2.24.3	For 8 way, Double door TPN MCBDB	each	1448	1	1448.00
57		Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
58	2.13.2	63 A	each	1115	1	1115.00
59		Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing				

		MCB DB complete with connections, testing and commissioning etc. as required				
60	2.10.1	Single pole	each	285	14	3990.00
61	2.10.4	Triple pole	each	1070	2	2140.00
62		Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.				
63	1.14.5	2 X 10 sq. mm + 1 X 6 sq. mm earth wire	mtr.	621	20	12420.00
64	1.14.3	2 X 4 sq. mm + 1 X 4 sq. mm earth wire	mtr.	373	50	18650.00
65	1.14.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	Mtr.	311	50	15550.00
66	1.14.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	mtr.	267	50	13350.00
67	1.32	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	each	659	6	3954.00
		Total Including GST				**2,35,06,014.68**

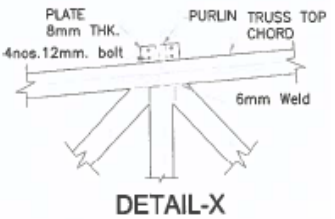


TRUSS PLAN



TYP. TRUSS-1 SECTION

S.No	Member Name	Member Detail
1	SHS 220X220X8	
2	SHS 220X220X6	
3	SHS 180X180X6	
4	SHS 91.5X91.5X3.6	
5	SHS 72X72X3.2	
6	RHS 100X200X3.2	
7	SHS 150X150X4	
8	SHS 50X50X3.6	



DETAIL-X