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INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING**Forming part of bid document**

The EXECUTIVE ENGINEER (E) RANCHI-I, CPWD, RANCHI on behalf of President of India invites online percentage rate bids from approved and eligible contractors of CPWD enlisted (As per order No.DG/Enlist.Rules-2026/Misc./01 Dtd.31/12/2025) in appropriate class in **(B&R)** category for the following work(s):-

Sl. No.	NIT No.	Name of work & location	Estimated cost put to bid Rs.	Earnest Money	Stipulated Period of Completion of work	Last date & time of online submission of bid, copy of receipt of deposition of original EMD and other Documents as specified in the bid documents	Date & Time of opening of bid
1	32/2026-27/EE(E) RANCHI-I	Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal Road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services & Civil works).	Estimated Cost: Total = Rs.64,04,939/- Elect: Rs.51,25,474/- Civil: Rs.12,79,465/-	RS.1,28,099/-	04 Months	Upto 15:00 Hrs. 15.09.2026	At 15:30 Hrs. 15.09.2026

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 bidders posted on website shall form part of bid document.
3. 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 can be seen and downloaded from website <https://etender.cpwd.gov.in> or cpwd.gov.in free of cost.

4. But the bid can only be submitted after deposition of original EMD either in the office of Executive Engineer inviting bid or Division office of any Executive Engineer, CPWD within the period of bid submission and uploading the mandatory scanned documents such as insurance surety bonds, Account Payee Demand Draft or Bankers cheque or Fixed Deposit Receipts or/and Bank Guarantee (for balance amount as prescribed) from any of the commercial bank towards EMD in favor of Executive Engineer as mentioned in NIT, receipt for deposition of original EMD to Division office of any Executive Engineer (including NIT issuing EE/AE), CPWD and other documents as specified.
5. 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 before hand. The necessary training materials including the videos with step to step process are available on download section of <https://etender.cpwd.gov.in>.
6. The intending bidder must have valid Class-III digital signature certificate with encryption key (combo type) to perform any operations/transactions on the e-tendering portal/website and the bidder should download and install the emSigner on their system as per instructions available on download section of <https://etender.cpwd.gov.in>.
7. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
8. Contractor can upload documents in the form of JPG format and PDF format.
9. Contractor must ensure to quote rate in the prescribed column(s) meant for quoting rate in figures appears in yellow colour and the moment rate is entered, it turns sky blue.
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.
- 10. ~~Pre-bid conference shall be held in the Office of Chief Engineer Ranchi, CPWD, Airport Road, Hinoo, Ranchi at 16.00 hrs. on */*/2025 to clear the doubt of intending bidders, if any.~~ Any query/clarification is welcome on Email: rcedcpwd@gmail.com, rced1cpwd@gmail.com 14.00 Hrs on 10.09.2026.**

List of mandatory documents to be scanned and uploaded within the period of bid submission:

- 1) Insurance Surety Bond, Demand Draft/ Account Payee Banker's Cheque/FDR/Bank Guarantee ~~if e-BG~~ of any commercial Bank against EMD.
- 2) Enlistment Order of the Contractor.
- 3) GST Registration Certificate if already obtained by the bidder.
If the bidder has not obtained GST registration as applicable for Jharkhand state, then he shall scan and upload following under taking 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 CPWD, 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 CPWD or GST department in this regard"
- 4) Copy of receipt for deposition of original EMD to Division office of any Executive Engineer (including NIT issuing EE/AE) of CPWD.
- 5) Undertaking on structural stability and soundness as per prescribed format Form 'F'.
- 6) The certificate issued through LMS (Learning Management System) in ERP under Train the Trainers Program arranged by ERP Unit.
- 7) CPWD Form-7 duly signed.
- 8) Copy of elect. Licence or an undertaking stating that "I/We will either obtain valid electrical licence at the time of execution of electrical work"
- 9) If the bidder is a firm in partnership, the bid shall be signed by all the partners of the firm above their full type written names and current address, or, alternatively, by a partner holding power of attorney for the firm. In the latter case, a certified copy of the power of attorney should accompany the bid. In both cases a certified copy of the partnership deed and current address of all the partners of the firm should accompany the bid.
- 10) If the bidder is a limited company or a corporation, the bid shall be signed by a duly authorized person holding power of attorney for signing the bid accompanied by a copy of the power of attorney. The bidder should also furnish a copy of the Memorandum of Articles of Association duly attested by a Public Notary.

GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT
NOTICE INVITING E-BID
PART - A

Percentage rate bids are invited by EXECUTIVE ENGINEER (E) RANCHI-I, CPWD, RANCHI (Telephone No.0651-2411353, E-mail ID: eerced-cpwd@gov.in, rcedcpwd@gmail.com) on behalf of President of India from approved and eligible contractors of CPWD enlisted in appropriate class in (B&R) category for the work of **“Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal Road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services & Civil works).”**

1. The enlistment of the contractors should be valid on the last date of submission of bids. In case the last date of submission of bid is extended, the enlistment of contractor should be valid on the original date of submission of bids.
 - 1.1 The work is estimated to cost **Rs.64,04,939/-**. 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 Division which will deal with all matters relating to the invitation of 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 bidders on prescribed Form No.CPWD 7/8 (or other Standard Form as mentioned) which is available as a Govt. of India Publication and also available on website www.cpwd.gov.in. Bidders 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 **04 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.

OR

~~The site for the work shall be made available in parts as specified below:~~

5. The architectural drawings are available and may be asked from **EXECUTIVE ENGINEER (E) RANCHI-I** and structural drawings shall be made available in phased manner, as per requirement of the same as per approved programme 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 <https://etender.cpwd.gov.in> or www.cpwd.gov.in free of cost.
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 in the form of **Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee** ~~in e-BG~~ (for balance amount as prescribed) from **any of the Commercial Banks (drawn in favour of Executive Engineer (E), RCED, CPWD, Ranchi)** 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 Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving Executive Engineer (including NIT issuing EE/AE) shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT

A part of earnest money is acceptable in the form of bank guarantee also. In such case, minimum 50% of earnest money or Rs. 20 lac, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee of any Commercial bank having validity for a period of 90 days for single bid works and 180 days for two bid system or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

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 Enlistment Order and 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. **However, certified copy of all the scanned and uploaded documents as specified in e-tender notice shall have to be submitted by the lowest bidder within a week physically in the office of tender opening authority.** Online bid documents submitted by intending bidders shall be opened only of those bidders, whose original EMD deposited with any division of CPWD and other documents scanned and uploaded are found in order.

The bid submitted shall be opened at 15:30 Hrs on 15.09.2026

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 (PG) and additional performance guarantee (APG) of 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 ~~in e-BG~~ from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee and additional 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 and additional 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 sub-contractors, 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:-**

The said work comprises of for Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal Road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services & Civil works).

The work shall also comprise of various services such as including provision for Fire Fighting System. The main contractor will associate with specialized firm for executing specialized work of part-B as per terms and condition specified their on.

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 President of India 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 President of India 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. The contractor shall not be permitted to bid for works in the CPWD Circle (Division in case of contractors of Horticulture/Nursery category) responsible for award and execution of contracts, in which his near relative is posted as Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the Central Public Works Department or in the Ministry of Housing and Urban Affairs. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department

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 **30 (Thirty) days** from the date of opening of bids in case of single bid system.

Further

(i) If any tenderer withdraws his tender or makes any modification 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 modification 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 part of 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 C.P.W.D. Form 7 or other Standard C.P.W.D. Form as applicable.

19. For Composite Bids

19.1.1 The Executive Engineer in charge of the major component will call bids for the composite work. 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.

19.1.2 The bid document will include following three components:

Part A: CPWD-6, CPWD-7 including schedule A to F for the major component of the work, Standard **GCC Construction work – 2023** as amended/ modified & corrected up to **previous day of the last date of submission of bid.**

Part B: General/specific conditions, specifications and schedule of quantities applicable to major component of the work.

Part C: Schedule A to F for minor component of the work (competent authority under clause 2 and clause 5 shall be same authority as mentioned in schedule A to F for major components), General/specific conditions, specifications and schedule of quantities applicable to minor component(s) of the work.

19.1.3 The bidders must associate himself, with agencies as per NIT conditions.

19.1.4 The eligible bidders shall quote rates for all items of major component as well as for all items of minor components of work.

19.1.5 After acceptance of the bid by competent authority, the EE in charge of major component of the work shall issue letter of award on behalf of the President of India. After the work is awarded, the main contractor will have to enter into one agreement with EE in-charge of major component and has also to sign two or more copies of agreement depending upon number of EE's/DDH in-

charge of minor components. One such signed set of agreement shall be handed over to EE/DDH in-charge of minor component(s).

EE of major component will operate Part A and Part B of the agreement. EE/DDH in-charge of minor component(s) shall operate Part- C alongwith Part A of the agreement.

19.1.6 Entire work under the scope of composite bid including major and all minor components shall be executed under one agreement.

19.1.7 Security Deposit will be worked out separately for each component corresponding to the estimated cost of the respective component of works.

19.1.8 The main contractor has to associate agencies for specialized component(s) conforming to eligibility criteria as defined in the bid document and has to submit detail of such agency(s) to Engineer-in-Charge of relevant component(s) within prescribed time. Name of the agency(s) to be associated shall be approved by Engineer-in-Charge of relevant component(s).

19.1.9 In case the main contractor intends to change any of the above agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-Charge of relevant specialized component(s).

The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-Charge is not satisfied with the performance of any agency, he can direct the contractor to change the agency executing such items of work and this shall be binding on the contractor.

19.1.10 The main contractor has to enter into MoU with agency(s) associated by him . Copy of such MoU shall be submitted to EE/ DDH in charge of each relevant component as well as to EE-in-charge of major component. In case of change of associate contractor, the main agency(s) has to enter into MoU/agreement with the new contractor associated by him.

19.1.11 Running payment for the major component shall be made by EE of major discipline to the main contractor. Running payment for minor components shall be made by the Engineer- in-Charge of the discipline of minor component directly to the main contractor. The CMB shall be maintained independently by Engineer-in-Charge of major and minor components

19.1.12A. The composite work shall be treated as complete when all the components of the work are complete. The completion certificate of the composite work shall be recorded by Engineer-in-Charge of major component after record of completion certificate of all other components.

19.1.12B. Final bill of whole work shall be finalized and paid by the EE of major component. Engineer(s) in charge of minor component(s) will prepare and pass the final bill for their component of work and pass on the same to the EE of major component for including in the final bill for composite contract.

20. The intending bidders are required to update their profile in CPWD e- tender portal and to upload their bids well in advance of last date of submission of tender. Any issue related to updating profile/uploading tender can be resolved through the concerned Executive Engineer (Telephone No.0651-2411353, **E-mail ID: ecerced-cpwd@gov.in, rcedcpwd@gmail.com**) or ERP helpline No.18001803286 or e-mail: cpwd.support@techmahindra.com. The e-tendering bidders are also advised not to wait to raise any issues till the last date of submission of bid in their own interest.

PROFORMA FOR ORIGINAL EARNEST MONEY DEPOSITION

(Receipt of deposition of original BG/DD/FDR/Banker's Cheque as EMD if deposit)

(Receipt No.....dated.....)

(1) Name of work "Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal Road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services & Civil works)."

(2) NIT No.32/2026-27/EE(E) RANCHI-I

(3) Estimated Cost For Rs.64,04,939.00

(4) Amount of Earnest Money Deposit for Rs.1,28,099.00

(5) Last date of submission of bid: 15.09.2026

(1) Name of contractor.....

(2) Form of EMD.....

(3) Amount of Earnest Money Deposit for Rs.....

(4) Date of submission of EMD.....

EMD to be made in favour of Executive Engineer(E), RCED, CPWD, Doranda, Ranchi

Signature, name and Designation of EMD receiving officer (EE/AE(P)/AE/AAO)

alongwith office stamp

Undertaking on structural stability and soundness of already completed buildings and infrastructure projects.

Name of work: Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal Road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services & Civil works).

NIT No:- **32/2026-27/EE(E) RANCHI-I**

I/we undertake and confirm that any building / infrastructure 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) years.

I/we, further, undertake that if such information comes to the notice of CPWD, then Engineer-in- Charge 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 Engineer-in-Charge shall be free to debar us forever from tendering in CPWD. The decision of Engineer-in-Charge 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: (i) Affidavit to be furnished on a ‘Non-judicial’ stamp paper of Rs.200/- (scanned copy of the notarized affidavit to be uploaded at the time of submission of bid)

(Guarantee offered by Bank to CPWD inconnection with the execution of contracts)

Form of Bank Guarantee for Earnest Money Deposit/Performance Guarantee (PG)/Additional Performance Guarantee (APG)/Security Deposit/Mobilization Advance

1. Whereas the Executive Engineer.....(name of division)....., CPWD on behalf of the president of India (hereinafter called "The Government") has invited bids under(NIT number).....datedfor.....(name of work).....The Government 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 Executive Engineer.....(name of division)....., CPWD on behalf of the president of India (hereinafter called "The Government") has entered into an agreement bearing number.....with.....(name and address of contractor).....(hereinafter called "the contractor") for execution of work.....(name of work).....The Government has further agreed to accept an irrevocable Bank Guarantee for Rs.....(Rupees.....only) valid upto.....(date).....as Performance Guarantee/ Security Deposit/ Mobilization Advance 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 bank).....(hereinafter referred to as "the Bank") hereby undertake to pay to the Government an amount not exceeding Rs. (Rupees..... Only) on demand by the Government within 10 days of the demand.
3. We,(indicate the name of the Bank)....., do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Government stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). 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. (Rupeesonly).
4. We, (indicate the name of the Bank)....., further undertake to pay the government 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 Government shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder 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(s) or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor(s) 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 Government 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(s).
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 Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. (Rupeesonly) and unless a claim in writing is lodged with us within the date of expiry or the extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Date.....

Witness :

1. Signature.....

Name and address

Authorized signatory

Name

Designation

Staff code no.

Bank seal

1. Signature

Name and address

*Date to be worked out based 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.

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER-PROOFING WORKS &

Anti termite treatment

(All Water Proofing Items/Anti termite treatment)

The agreement made this..... day of (Two Thousandonly) betweenS/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) datedand made between the GUARANTOR OF THE ONE PART AND the Government of the other part where by the contractor interalia under took to render the building and structures in the said contract recited completely water and leak-proof/**Anti termite**.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain water and leak proof/**Anti termite**, for five years from the date of completion of the work.

NOW THE GUARANTOR hereby Guarantee that work executed by him will render the structures completely leak proof/**Anti termite** and the minimum life of such water proofing treatment/ **Anti termite** shall be 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 and binding on Guarantor.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect being found render the building water proof/**Anti termite** to the satisfaction of 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 guarantee or fails to execute the water proofing/**Anti termite** and fails to control all kinds of leakage and seepage 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 in cured 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 havebeen executed by the obligator andby for and on behalf of the PRESIDENT OF INDIA on the day, month and year first above written.

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

1.....

2

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

1.....

2.....

Note : For Water proofing & Anti termite minimum 10% (ten percent) of the cost of these items would be retained as Guarantee Bond to watch the performance of the work done shall be withheld for five years from the date of completion of the work.

PERCENTAGE RATE TENDER & CONTRACT FOR WORKS

Tender for the work of: **Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal Road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services & Civil works).**

1. To be uploaded/submitted by **15:00 Hours on 15.09.2026** to the EXECUTIVE ENGINEER (E) RANCHI-I, CPWD, RANCHI upload at <http://etender.cpwd.gov.in> or www.cpwd.gov.in.
2. To be opened in presence of tenderers who may be present at **15:30 Hours on 15.09.2026** in the office of the EXECUTIVE ENGINEER (E) RANCHI-I, CPWD, RANCHI.

TENDER

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 & 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 respect with the specifications, designs, drawing and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respect of accordance with, such conditions so far as applicable.

I/We agree to keep the tender open for **30 (Thirty) days from the due date of its opening in case of single bid system** 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 Executive Engineer as per the bid document.

A copy of earnest money deposit receipt of prescribed amount deposited in the form of Insurance Surety Bond, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee i/c eBG (as prescribed) issued by a commercial Bank, is scanned and uploaded. If I/We, fail to furnish the prescribed performance guarantee and additional performance guarantee within prescribed period, I/We agree that the said President of India or his successors, 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 work as specified, I/We agree that President of India or the 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 Earnest Money or Performance Guarantee and 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 CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee and 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/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated

Signature of Contractor

Witness:

Postal Address

Address:

Occupation:

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by 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:-

- (a) *
- (b) *
- (c) *

For & on behalf of the President of India.

Signatures.....*.....

Dated:*.....

Designation.....*.....

PROFORMA OF SCHEDULES FOR ELECTRICAL WORK

SCHEDULE 'A'

Schedule of quantities (as per PWD-3):	Electrical-Page No.76 to 81
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SCHEDULE 'D'

Extra schedule for specific requirements/document for the work, if any:

As attached in tender documents.

SCHEDULE 'E'

Reference to General Conditions of contract.	Applicable GCC is GCC Construction Works-2023, as modified and corrected up to previous day of the last date of submission of the tender.
Name of work	Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal Road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services & Civil works).
Estimated cost of work	Rs.64,04,939/- (Elect: Rs.51,25,474/- & Civil : Rs.12,79,465/-)
(i) Earnest money	Rs.1,28,099/-
(ii) Performance Guarantee (PG)	5% of Estimated cost put to tender (ECPT) or 5% of tendered amount whichever is higher (as per OM No. DG/CON/Construction 2023/20 dated 27.02.2026).
(iii) Additional Performance Guarantee (APG)	Tendered Amount below 80% value of ECPT (as per OM No. DG/CON/Construction 2023/20 dated 27.02.2026)
(iv) Security Deposit	2.5 % of tendered value

SCHEDULE 'F'

GENERAL RULES & DIRECTIONS:		
Officer inviting tender:		EXECUTIVE ENGINEER (E)-RANCHI-I, CPWD, RANCHI.
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 (Refer Clause-12)
Definitions:		
2(v)	Engineer-in-Charge :	EXECUTIVE ENGINEER (E)-RANCHI-I or his successor thereof
2(viii)	Accepting Authority:	CE-Ranchi, CPWD, Ranchi
2(x)	Percentage on cost of materials and labour to cover all overheads and profits :	15%
2(xi)	Standard Schedule of Rates	Electrical: DSR-2025 with up-to-date correction slips up to last date of submission of bids and Market Rates.
2(xii)	Department	Central Public Works Department

9(ii)	Standard CPWD contract Form GCC 2023, CPWD Form 7 as modified & corrected up to	Standard CPWD contract form GCC Construction Works-2023 , CPWD Form 7 as modified & corrected up to previous day of the last date of submission of the tender.
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Clause 1

(i)	Time allowed for submission of Performance Guarantee, Programme Chart (Time and Progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board or Proof of applying thereof from the date of issue of letter of acceptance:	7 days
(ii)	Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above:	3 days

Clause 2

Authority for fixing compensation under clause 2 :	CE-Ranchi or his successor thereof
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Clause 5

Authority to decide:-

(i)	Authority to convey the decision of shifting of milestone and Extension of time	:	Executive Engineer (E)-Ranchi-I or his successor thereof
(ii)	Authority to decide Rescheduling of mile stones and extension of time	:	CE-Ranchi or his successor thereof
(iii)	Shifting of date of start in case of delay in handing over of site.	:	CE-Ranchi or his successor thereof

Time allowed for execution of work	04 Months
Number of days from the date of issue of letter of acceptance for reckoning date of start	10 days

Mile stone(s) as per table given below: -

Sl. No.	Description of Milestone (Physical)	Time allowed in days (from date of start)	Amount to be withheld in case of non achievement of milestone (Civil and/or electrical Tender Amount)
1	Electrical: Submission for Approval of drawing, TDS of all types of Fire Pump, Fire Panel, Cable alongwith GA drawing. Civil: Completion of all structure works upto plinth level.	01 Months	1.0%
2	Electrical: Supplying of all types of Fire Pump, Fire Panel, Cable alongwith GA drawing. Civil: Completing fire fighting building in all respect i/c structure, finishing works etc.	03 Months	2.0%
3	Electrical: Completing laying of all cable and Installation of all types of Fire Pump, Fire Panel, Cable work.	3.6 Months	1.0%
4	Completing all civil & electrical works i/c Testing, Commissioning & Handing over.	04Months	1.0%

Note: Operation of Mile Stone shall be made separately by Executive Engineer of major component and Executive Engineer of minor component as per details given in above table for their respective tender value

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 is available with the Client	10 days
Part B	Portions with encumbrances	NIL	-
Part C	Portions dependent on work of other agencies	NIL	-

Clause 6

Computerized Measure Book (CMB) / Electronic Measurement Book (EMB) (i) Mode of Measurement: CMB / EMB	Yes, eMB through ERP.
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Clause 7

Gross work to be done together with net payment/adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment	Rs.12.00 Lakh (Electrical)
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Clause 7A

Whether Clause 7A shall be applicable -	Yes, No Running Account bill shall be paid for the work till the applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board whatever applicable are submitted by the contractor to the Engineer-in-Charge.
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Clause 8

I. Details of consultancy work/building/infrastructure project to be completed early for use :	Full scope as per NIT conditions
II. Competent authorities to inspect and issue part / final completion plans	CE-Ranchi or his successor thereof

Clause 8A

Authority to decide compensation on account if contractor fails to submit completion plans.	Engineer-in-charge. (0.1% of tendered amount or Rs.1.00 Lakh whichever is more)
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Clause 10A

List of testing equipment to be provided by the contractor at site lab 1. Earth Tester, 2. Test lamp, 3. Meggar, 4. Line Tester 5. Chase Cutting Machine, 6. Bending device	All equipments required till handing over the works
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Clause 10B(ii)

Whether Clause 10 B (ii) shall be applicable	Not Applicable
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Clause 10C

Component of labour expressed as percent of value of work	15%
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Clause 10CC	Not Applicable
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Clause 11

Specifications to be followed for execution of work	CPWD GENERAL SPECIFICATIONS FOR ELECTRICAL WORKS PART-I (INTERNAL) 2023, PART-II (EXTERNAL) 2023, CPWD GENERAL SPECIFICATIONS FOR FIRE FIGHTING (WET RISER AND SPRINKLER SYSTEM)(PART-V) 2020 COMMERCIAL AND ADDITIONAL CONDITIONS FOR THIS WORK, THE INDIAN ELECTRICITY ACT, 2003, INDIAN ELECTRICITY RULES 1956 AMENDED UPTO DATE AND AS PER ADDITIONAL SPECIFICATIONS, ACCEPTABLE MAKES OF MATERIALS ATTACHED WITH SCHEDULE OF WORK
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12.2 (c)		Deviation Limit beyond which clauses 12.2 (c) shall apply for building work	100% (Hundred percent)
12.4	(i)	Deviation Limit beyond which clauses 12.2 (c) shall apply for foundation work (except items mentioned in earth work sub-head in DSR and related items)	100% (Hundred percent)
	(ii)	Deviation Limit for items mentioned in earth work sub-head of DSR and related items.	100% (Hundred percent)

Clause 16

Competent Authority for deciding reduced rates	1. CE-Ranchi or his successor thereof - (upto 5% of total tendered amount) 2. ADG - Patna - (Beyond 5% of total tendered amount)
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Clause 18

List of mandatory machinery, tools & plants to be deployed by the Contractor at site:-

1	Any other machinery required for completion of the work as per decision of Engineer-in-Charge - As per actual requirement
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Clause 19 C	-	EXECUTIVE ENGINEER (E) RANCHI-I, CPWD, RANCHI to decide penalty for each default
Clause 19 D	-	EXECUTIVE ENGINEER (E) RANCHI-I, CPWD, RANCHI to decide penalty for each default
Clause 19 G	-	EXECUTIVE ENGINEER (E) RANCHI-I, CPWD, RANCHI to decide penalty for each default
Clause 19 K	-	NA (For less than works ECPT Rs. 5 Cr.)

Clause 25

Settlement of Dispute by Conciliation and Arbitration

SI. No.		
(i)	Conciliator	ADG – Patna or his successor thereof
(ii)	Arbitrator Appointing Authority	CE-Ranchi or his successor thereof
(iii)	Place of Arbitration	Ranchi

Clause 32**Requirement of Technical Representative(s) and recovery Rate**

SI No	Minimum Qualification of Technical Representative	Discipline	Designation (Principal Technical Representative)	Minimum Experience	Number	Rate at which recovery shall be made from the Contractor in the event of not fulfilling provision of clause 36(i)	
						Figure	Words
1.	Graduate Engineer or Diploma Engineer	Elect	Project Manager cum Planning/quality/Site/billing Engineer	2 Years or 5 Years respectively	1	Rs. 15,000/- (per month per person)	Rupees Fifteen Thousand only. (per month per person)

Clause 38

(i)	(a)	Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates 2023 printed by CPWD.	
(ii)		Variations permissible on theoretical quantities:	
	(a)	Cement, For works with estimated cost put to tender more than Rs. 25 lakh.	2% plus/minus
	(b)	Bitumen All Works	2.5% plus & only & nil on minus side.
	(c)	Steel Reinforcement and structural steel sections for each diameter, section and category	2% plus/minus
	(d)	All other materials	Nil

PART – B **(Electrical Works)**

PART-B

Name of work: Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services & Civil works)

1. The work shall be carried out under the scope of composite tender which shall be executed under one agreement. Schedule for Electrical Works is Part-B of the tender documents. The main contractor for Electrical work will Associate appropriate & eligible CPWD registered contractor for carrying out Civil Component of work as given in Part-C (Civil Works) of the tender documents. The eligible tenderers for major component in Association of Civil Contractor will quote rates for Civil Component (Part-C Civil Work) also. The lowest tenderer would be decided based on quoted rates in respect of all the schedules attached in tender documents.
2. The main contractor will associate specialized agency for the remaining E&M works i.e. **SITC of Fire Fighting System**, he shall be allowed to execute the same after due verification & approval of the Executive Engineer (E) after getting the In-principal approval from NIT approving authority. If himself is eligible, they will submit eligible documents.

For components of E&M works, the eligibility criteria for associate agency will be as detailed below:

Sl. No.	Component of E&M works	Estimated Cost Rs.	Eligibility
I	SITC of Fire Fighting System	51,25,474/-	The successful bidder shall associate with him specialized agencies/Firms/bidders, who fulfill the following requirements to undertake the work. Joint ventures are not accepted. a) Should have satisfactorily completed similar works during the last seven years ending last date of the month previous to the one in which tenders are invited. For this purpose, the cost of work shall mean gross value of the completed work including cost of material supplied by the Government/Client but excluding those supplied free of cost. This should be certified by an officer not below the rank of Executive Engineer/Project Manager or equivalent. (i) Three similar works each of value not less than 40% of the estimated cost i.e. Rs.20.50 Lakhs OR (ii) Two similar works each of value not less than 60% of the estimated cost i.e. Rs.30.75 Lakhs OR (iii) One similar work of value not less than 80% of the estimated cost i.e. Rs.41.00 Lakhs b) Similar work means the work of “SITC of Fire Fighting System”. The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum calculated from the date of completion to previous day of last day of submission of bids.

3. The composite category contractor is also be eligible to carry out himself/herself any or all of these works without associating any specialized agency provided,
- i He fulfills the prescribed eligibility criteria respectively for these works as stipulated in NIT.
- OR**
- ii He directly procures the equipment of approved make from manufacturer and gets it installed from authorized agency/service provider of the manufacturer or specialized agency as per criteria mentioned in NIT.
4. The composite contractor and the associated specialized agencies is required to give affidavit to confirm their association.
5. Tender accepting authority approves the change of sub-agency in case it is required during the currency of the contract.
6. The lowest tenderer is required to submit, alongwith the performance guarantee after the acceptance of tender, an undertaking form the OEM regarding.
- (a) Authorization certificate.
 - (b) The OEM shall unconditionally support the lowest tenderer technically throughout the execution of contract as well as for maintenance/comprehensive maintenance contract for the useful life of the system, and
 - (c) OEM shall provide all the spares required for healthy functioning of the equipment for at least seven years from the date of supply of equipment.
7. No condition is incorporated in the NIT's regarding visits of CPWD officers within country or outside India to inspect equipments/materials/stores where such expenditure is to be borne either by the contractor. Officers of the department may conduct inspection before dispatch of equipments/materials at manufacturer's works. The contractor has to arrange facilities for inspection of equipments/materials including conducting the required tests in the manufacturing unit. However, no condition is incorporated in the NIT regarding inspection of equipments/materials in the manufacturing unit located outside India without prior permission of MoHUA.
8. After the work is awarded, one set of agreement shall be handed over to **Executive Engineer-Ranchi Project, CPWD, RANCHI**, who will be Engineer in charge of minor component Part-C (Civil) Works. **EXECUTIVE ENGINEER (E) - RANCHI-I, CPWD** of major component will operate Part-A and part-B of the agreement. Executive Engineer (Civil) in charge of minor components shall operate Part-C Civil Work along with Part-A of the agreement. The main contractor will have to sign another agreement for Part-C (Civil) Work with the **Executive Engineer-Ranchi Project, CPWD, RANCHI**. The main contractor has to enter in agreement with the contractor associated by him for execution of minor component Part-C (Civil) Work. Copy of such agreement shall be submitted to the **Executive Engineer-Ranchi Project, CPWD, RANCHI** the Engineer in Charge of minor component (Civil) as well as the **EXECUTIVE ENGINEER (E)-RANCHI-I, CPWD** Engineer in charge of major component. Running payments for the major component shall be made by the Executive Engineer of major discipline to the main contractor. Running payment for minor components shall be made by the Executive Engineer (Civil) in charge of the discipline of minor component either directly to the main contractor or Associated Electrical Contractor as agreement executed in between if so.
9. If Running Payments for major components is made to the main contractor by the Executive Engineer (E) for Part-B (E&M) Work in charge of the discipline of major component directly to the main contractor, The Main Contractor shall make payment to Associated Electrical Contractor within fifteen days positively. In case main contractor fails to make the payment to the contractor associated by him within 15 days of receipt of each running account payment then on the written complain of contractor associated for such major component Executive Engineer (E) in charge of major component shall serve the show cause notice to main contractor and after considering the reply of the same he may make the payment directly to the contractor associated for major component as per the terms & conditions of the agreement drawn between main

contractor and associate contractor fixed by him, if reply of main contractor either not received or found unsatisfactory, such payment made to the associate contractor shall be recovered by Executive Engineer in charge of major or minor component from the next RA/final bill due to main contractor as the case may be. The payment of major component of the work i.e. Part-B shall be made as per terms and conditions of the tripartite agreement among main agency, associated agency and Engineer-in-Charge of major component. The tripartite agreement shall be submitted to Engineer-in-Charge of minor component also.

10. If the main contractor fails to associate Electrical Contractor for execution of major components (Part-B **(E&M)** Work) within prescribed time or furnishes incomplete details or furnishes details of ineligible agencies even after the tenderer is given due opportunity, the entire scope of such component of works shall be withdrawn from the tender and the same shall be got executed by the Engineer-in-Charge at the risk and cost of the main contractor.
11. In case the main contractor intends to change the Associated Electrical Contractor during the operation of the contract, he shall obtain prior approval of respective Engineer-in-Charge of the agreement. The new Electrical Contractor shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-Charge of respective discipline is not satisfied with the performance of any agency, he can direct the contractor to change the agency executing such items of work and this shall be binding on the contractor.
12. Final bill of the whole work shall be finalized and paid by the Executive Engineer in charge of major component. Executive Engineer (Civil) will prepare and pass the final bill for his component of work and pass on the same to the in charge of major component for including in the final bill for composite work.
13. The **Chief Engineer-Ranchi** will be competent authority for deciding reduced rates pertaining to Part-B **(E&M)** Work, if any. Date of completion of all components of work will be same. Levy of compensation under Clause 2 as well as fair and reasonable extension of time will be granted by the **Chief Engineer-Ranchi** in charge of the major component in consultation with The **Chief Engineer-Ranchi** for Part-C **(Civil)** Work and on receipt of required information in this regard from the Executive Engineer of major discipline as well as concerned of minor discipline. Also Executive Engineer in charge of major component shall be competent authority to give fair and reasonable extension of time under provision of clause 5 and the **Chief Engineer-Ranchi** in charge of major component shall be competent authority to reschedule milestones as stipulated.
14. Some milestones shall be applicable for Part-C **(Civil)** components of work as given in CPWD 7/8 under clause-5. The Associated Agency of Electrical Components will ensure that their components of the work are executed in time without giving any chances for slippage of milestones of the project. The amount to be withheld under Clause 5 of the contract will be decided by the Executive Engineer of the main discipline and not by the Executive Engineer (C). In the event of not achieving the necessary milestones as assessed from milestone bar chart, specified percentage of the tendered value of will be withheld for failure of each milestone.
15. Arbitration case if any shall be handled by the Executive Engineer of the major discipline along with the support of the Executive Engineer (C) of minor discipline i.e. Part-C **(Civil)** Work.
16. The main contractor or his authorized representative or his Associated Electrical Contractor shall sign the site order book for **(E&M)** Works and comply with the remarks entered therein by the Engineer in Charge or his authorized representative of the Department (The Assistant Engineer (E) & The Junior Engineer (E) for the **(E&M)** Component of work.
17. The associated agency or main agency, whoever undertakes the work, shall be in possession of valid electrical contractor license before start of work

ADDITIONAL CONDITIONS FOR FIRE FIGHTING SYSTEM

1. Specification:

The work shall be executed as per CPWD's general specification for Electrical Works Part-I (Internal)-2023, Part-II (External)-2023, Part-V (Wet Riser and Sprinkler System for Fire Fighting Installations)-2020, I.E. Rules, Indian Standards amended up to date and as per direction of Engineer-in charge. The additional specifications are to be read with above and in case of any variations; specifications given along with the tender shall apply.

2. Terms of Payments:

Following percentage of contract rates for the various items included in the contract shall be payable against the stage of work shown herein on pro – rata basis.

- (i) No advance payment shall be made.
- (ii) 80% after initial inspection and delivery at site in good condition on pro-rata basis.
- (iii) 10% after completion of installation in all respect.
- (iv) Balance 10% will be paid after Testing, Commissioning & Handing Over to the department for beneficial use.

3. Approval from CFO: The Contractor shall be liable to obtain NOC from Chief Fire Officer, and work shall be deemed to be completed only after receiving NOC from CFO & rectification thereafter if any. However, required statutory fee if any shall be paid by department. However all liasoning work/arranging inspection of CFO shall be the responsibility of contractor. It is the responsibility of the contractor to apply for fire advisory from local fire safety department and get the preliminary inspection done before any work of Fire Fighting and Fire Alarm System. After completion of the work, the system shall be offered to local fire safety department for obtaining NOC.

4. Storage: Responsibility for storage of material for execution of work shall be of main contractor.

5. Power & Water Supply: Responsibility for supply of power & water for execution of work shall be of main contractor.

6. The material in required quantity to be used in the work shall be got approved from the Engineer-in-charge before its use at site. The Engineer-in-charge shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not as per specifications.

7. Contractor shall preserve the copies of invoices, test certificates, gate passes etc. to prove the genuineness of material/purchases. The responsibility of procurement of genuine material of specialized works shall rest with the contractor.

8. No inspection out side the country is permissible if required so the same will be deemed to be waived off and necessary test reports shall be submitted before the dispatch of equipment.

TECHNICAL SPECIFICATIONS FOR FIRE FIGHTING SYSTEM

1.0 SITE CONDITION:

The work is to be carried out for “Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services)”.

- 1.1 The Tenderers are advised to visit the site for any site particular to be well acquaintance about the site requirement by him, before tendering.

SCOPE OF WORK AND EXCLUSIONS:

- 1.2 General features and major components of the work are as under.

“Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting Services).”

- 1.3 The work shall comprise entire labour including supervision and all materials necessary to make a complete installation to the entire satisfaction of the department. The term complete installation shall mean, not only major items of equipment covered by these specifications, but also incidental sundry components necessary for complete execution and satisfactory performance of the installation, with all labour charges, whether or not these have been mentioned in detail in the tender documents. The work shall include data entry, programming, start up test and demonstration, training of personnel for maintenance and operation, submission of construction and installation drawings and writing diagrams, as built documents and system guarantee etc. as required.

COMPLIANCE WITH REGULATIONS AND INDIAN STANDARDS

All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards related to the works covered by this specification. In particular, the equipment and installation will comply with the following:

- (i) CPWD Specification for Internal (2013) and External Specification (1994) as amended up to date.
- (ii) Prevailing factories Act. as amended up to date.
- (iii) Indian Electricity Rules as amended up to date.
- (iv) B.I.S. & other standards as applicable as amended up to date.
- (v) Workmen's compensation Act. as amended up to date.
- (vi) Water works manual as amended up to date.

Interpreting Specifications:

In interpreting the specifications, the following order of decreasing importance shall be followed in case of contradictions:

- (a) Schedule of quantities
- (b) Technical specifications
- (c) Drawing (if any)
- (d) General specifications
- (e) Relevant BIS or other international code in case BIS code is not available.

TECHNICAL DETAILS OF FIRE FIGHTING SYSTEM

Internal Hydrant:- Every riser will be provided with the following at every floor including terrace

- | | | | |
|-------|--|---|-------|
| (i) | Single headed out let | - | 1 No |
| (ii) | First Aid Hose Reel | - | 1 No. |
| | (length of pipe shall be such that nozzle of the hose can be Taken into every room and within 6 Mtr. Of any part of The room keeping in view layout and obstruction) | | |
| (iii) | Hose pipe 63 mm dia 15 me long with male and female Coupling at both ends | - | 1 No |
| (iv) | Branch pipe 63 mm dia with 20 mm (nominal internal diameter) | | |
| | Nozzle and suitable for instantaneous connection | - | 1 No. |

Yard Hydrant (External Hydrant)

For fighting fire from outside the building, yard hydrants are provided around the building and in the closed court yard. For connecting yard hydrants a ring of pipe shall be laid underground around the building at a minimum distance of 2 m from the face of the building. All internal risers shall be connected with this ring. Yard hydrants shall be located at a minimum distance of 2 m but not more than 15 m from the building face. The yard hydrants shall be easily accessible and should normally be provided near boundary wall/along road. While locating yard hydrants it should be ensured that same do not become hindrance in vehicular movement or entrance to the building. Yard hydrants, should be located around the building in such a way that it should be possible to fight fire on any face of the building from the nearest hydrant. At least one hydrant post shall be provided for every 45 m.

Fire Hydrants shall be of stand post type conforming to IS 908. All Yard hydrant outlets shall be situated 1 m above ground level.

The stand posts shall be 80 mm in diameter for single headed hydrants. The stand posts shall be painted 'fire red'. Mild steel stand post may be accepted even in cases where underground mains are of cast iron, using flanged joints. Only Oblique hydrants conforming to IS 5290 with outlets angled towards ground shall be used. The hydrant couplings shall be of the instantaneous spring-lock (female) type of 63 mm diameter and valves shall be of the screw down type. Suitable pressure reducing devices shall be provided for yard as well as internal hydrants where the pressure exceeds 7 kgf/cm², considering the safety of operators. All hydrants should be serially numbered.

Yard hydrant will include the following accessories

- | | | | |
|-------|--|---|--------|
| (i) | Connection from ring main with 80 mm dia MS pipe | | |
| (ii) | 63 mm dia single head landing valve | - | 1 No. |
| (iii) | Butterfly/sluiice valve 80 mm dia | - | 1 No. |
| (iv) | Hose pipe 63 mm dia 15 m long with male and female coupling at ends | - | 2 Nos. |
| (v) | Branch pipe 63 mm dia with 20 mm nominal internal diameter nozzle, suitable for instantaneous connection | - | 1 No. |

All above components shall be housed in a suitable size MS cabinet made from 2 mm thick sheet with glass panel on front. The cabinet shall be painted red.

(Note: In case hose pipes and branch pipes are likely to be stolen from yard hydrants, the same may be kept in a central place i.e. fire control room/ fire pump room.)

Fire Service inlet: In order to facilitate feeding of water in the system by fire service, a 2/3 way 63 mm diameter collecting head shall be provided and connected with each riser/down comer and the ring main with non-return valve and butterfly/sluiice valve. This should be located at a place where fire brigade tender can reach.

Fire Service connection: It is for feeding water to underground storage tank by fire tenders. The static water storage tank shall be provided with a fire brigade collecting head with 4 number 63 mm diameter instantaneous male inlets arranged in a valve box at a suitable point at street level. If tank is not approachable for the fire engines, the fire brigade collecting head shall be connected to the static tank by a suitable fixed galvanized iron pipe not less than 150 mm in diameter to discharge water into the tank when required.

Fire Brigade draw out collecting head: Each of the static water storage tanks shall also be provided with a fire brigade draw out collecting head with 63 mm diameter instantaneous male draw out arranged in a valve box at a suitable point at street level. This draw out shall be connected to galvanized iron pipe of 100 mm diameter with foot valve arrangement in the tank.

Air Vessel: - To counteract the water hammer effect, air vessel shall be provided at the top of each riser.

Orifice Plate: - Suitable pressure reducing devices shall be provided for yard as well as internal hydrants to control pressure to desired limit especially at lower level hydrants.

Alarm for Wet Riser System: - To indicate the flow of water in the system, turbine type alarm shall be provided at a prominent place outside the pump house in the main line before any connection is taken. The alarm will indicate the healthiness of the system and shall not be silenced till the main fire pump is in operation.

Control system:-

The system shall be designed for operation automatically so that as and when water is drawn from the system through any hydrant, the pumps will operate automatically and feed water in to the system. However once a fire pump starts working, it will be stopped only manually (except jockey pump) or on account of any fault or non-availability of power supply to electrical pumps or low water level in UG/Terrace tank.

Facility shall also be provided for manual operation. A selector switch for auto/manual selection shall be provided for each pump.

The control system shall be designed to provide the following sequence of operation:-

- i) The Pressurization Pump shall maintain pressure in the system and shall operate only on account of slow pressure loss. In case of sudden pressure loss the Pressurization Pump shall not operate. The pump shall start when the water pressure in the system falls to a pre-set value (about 0.35 kgf/cm² below normal system pressure) and shut down when the system pressure reaches the set value. Both limits shall be adjustable.
- ii) Main Electric Fire Pump shall operate on account of sudden pressure loss. So long as Main Electric Fire Pump is working, other Fire Pumps will not operate. The pump shall start when the water pressure falls to a pre-set value in the system (about 1 kgf/cm²). In case, Normal Electric Supply fails while the Main Electric Fire Pump is running, the DG Set for essential supply will start within 5 seconds.
- iii) The Diesel Fire Pump will start on sudden pressure loss, only in case supply to Main Electric Fire Pump is not available or within a pre-set time the Main Electric Fire Pump fails to start or fails during operation. No other pump will be working when Diesel Engine Fire Pump is in operation. Audio-Visual Alarm shall be available to indicate failure of Main Electric Fire Pump.
- iv) A three attempts starting facility will be provided for diesel pump.
- v) If within a pre-set time, the standby pump also fails to start or fails to develop pressure, the standby pump shall also be shut down and locked out. An audio visual alarm indication shall be given at the control panel.
- vi) The Terrace Pumps will start on sudden loss of pressure only when both the Fire Pumps have either failed to start or exhausted water.
- vii) Only one pump will be working at a time. In manual mode more than one pump can be started.
- viii) Water level in UG and terrace tanks shall be monitored and in case of low water level, pumps connected with the tank shall not operate (even on manual mode) or stop operation as the case may be. An audio-visual alarm shall be given at the control panel.

Wet Riser:- Wet Riser shall be interconnected at terrace level to form a ring and cut-off shall be provided for each connection to enable repair/maintenance without affecting rest of the system.

Down Comer:- In down comer, underground tank, fire pumps at ground level, ring main and yard hydrant will not be provided. A minimum of two terrace pumps (electrical) shall be provided. One pump shall act as standby. All down comer pipes shall be inter connected at the terrace level. In case terraces are not interconnected, all building will be treated as individual buildings.

Fire service inlet shall be provided with each Riser/down comer for facilitating pumping of water from fire service tenders.

Control system: - The starting of terrace pump shall be automatic i.e. with the opening of any hydrant valve or hose reel on any floor, the pump will start automatically with fall in line pressure. In addition start/stop push buttons shall be provided at ground floor near internal hydrant for starting the pump manually. Where fire control room has been provided, remote operation of terrace pump may be done from fire control room in place of near internal hydrant. The control panel for terrace pumps shall be provided near the pumps in a suitable enclosure to avoid unauthorized operation.

FIRE PUMPS

TYPE

Pumps conforming to IS 12469 shall be exclusively used for Fire fighting purposes. The pumps shall be centrifugal type direct driven with a 3 phase, 415 V + 10%, 50 Hz, A.C. motor. The standby fire pump shall be driven by diesel engine. The pumps may be either of horizontal split casing (HSC) type with operating speed not exceeding 1500 rpm, or solid casing with operating speed not exceeding 3000 rpm as specified in the tender documents.

RATING

The terrace pump shall be suitable for continuous operation in the system. The head and discharge requirements shall be as specified in the tender documents. The head shall be suitable for the system and shall take into consideration the pressure drops across the various components in the water circuit as well as the frictional losses.

Pump shall be capable of discharging not less than 150 percent of the rated discharge at a head of not less than 65 percent of the rated head. The shut off head shall not exceed 120 percent of the rated head in the case of horizontal Pumps.

MATERIAL AND CONSTRUCTION

- i) The centrifugal pumps shall conform to IS 1520.
- ii) The pump casing shall be of heavy section close grained cast iron and designed to withstand 1.5 times the working pressure. The casing shall be provided with shaft seal arrangement as well as flanges for suction and delivery pipe connections as required.
- iii) The impeller shall be of bronze, brass or stainless steel. This shall be shrouded type with machined collars. Wear rings, where fitted to the impeller, shall be of the same material as the impeller. The impeller surface shall be smooth finished for minimum frictional loss. The impeller shall be secured to the shaft by a key.
- iv) The shaft shall be of stainless steel and shall be accurately machined. The shaft shall be balanced to avoid vibrations at any speed within the operating range of the pump.
- v) The shaft sleeve and wearing ring etc. shall be of bronze, brass or stainless steel.
- vi) The bearings shall be ball or roller type suitable for the duty involved. These shall be grease lubricated and shall be provided with grease nipples/cups. The bearings shall be effectively sealed against leakage of lubricant or entry of dust or water.
- vii) The shaft seal shall be mechanical type, so as to allow minimum leakage. A drip well shall be provided beneath the seal.
- viii) The pumps shall be directly coupled to the motor/diesel engine shaft through a flexible coupling protected by a coupling guard.
- ix) The pump and motor/diesel engine shall be mounted on a common robust bed plate fabricated from mild steel section. The bed plate shall have rigid, flat and true surfaces to receive the pump and motor/diesel engine mounting feet. The pump will be perfectly aligned with the motor/engine so as to avoid any vibration during operation at all variations of load.

ACCESSORIES

Each pump shall be provided with the following accessories:-

- (a) Butterfly / sluice valves on suction and discharge.
- (b) Reducers, as may be required to match the sizes of the connected pipe work.
- (c) Non-return valve at the discharge.
- (d) Pressure gauge at discharge side between pump and the non-return valve.

INSTALLATION

- a) The pump and motor /engine assembly shall be mounted and arranged for ease of maintenance and to prevent transmission of vibration and noise to the building structure or to the pipe work.
- b) The pump and motor /engine assembly shall be installed on suitable RCC foundation. The length and width of the foundation shall be such that 100 mm space is left all around the base frame. The height of foundation shall be so decided that the total weight of foundation block is 1.5 times the operating weight of the pump assembly.
- c) The foundation shall be isolated from the floor by vibration isolating pads.
- d) More than one pump and motor assembly shall not be installed on a single base or Cement concrete block.
- e) The suction / discharge pipe shall be independently supported and their weight shall not be transferred to the pump. It should be possible to disconnect any pump for repairs without disturbing the connecting pipe line.
- f) A minimum clearance of 1 meter around the main pumps shall be provided.

PIPE WORK

PLUMBING DESIGN

Pipe sizes shown in tender documents are purely for contractor's guidance. The contractor shall be responsible for selection of sizes as per detailed engineering to be done by him. Plumbing design to be done by the contractor shall incorporate the following:-

- (a) Butterfly/sluice valves shall be provided at suction and delivery sides of pumps
- (b) Fire service connection/inlet
- (d) Test valve.
- (e) Drain connections.
- (i) For testing the system healthiness and automatic operation on daily basis, one test pipe with Butterfly/sluice valve shall be provided in common discharge header. For avoiding wastage of water, this pipe shall discharge water in the tank.
- (ii) Non return valve shall be provided at the delivery of each pump and fire service inlet. This Shall be of swing type.
- (iii) Air release valves with ball valve shall be provided in the piping system for venting trapped air With a size of 25 mm for pipes up to 100 mm and 40 mm for larger pipes.
- (iv) Plumbing drawings showing the sizes of pipe, valves, layout and other details shall be prepared and shall be got approved from the Engineer-in-Charge before the execution of the plumbing work.

PIPE MATERIALS

Pipes shall be of the following materials

- (a) Mild steel heavy class(c-class) conforming to IS:1239 upto 150 mm.
- (b) Welded black steel pipe, class 2, conforming to IS: 3589, for sizes greater than 150 mm. These pipes shall be factory rolled and fabricated from minimum 6 mm thick M.S sheet for pipes up to 350 mm dia and from minimum 7 mm thick M.S. sheet for pipes for 400 mm dia and above.
- (c) Cast iron double flanged class-"A" conforming to IS: 1536 or IS: 1537(to be provided only in under ground application)
- (d) GI pipe medium class (B-class) conforming to IS: 1239(For Drain)
- (e) Cadmium plated steel nuts/bolts/washers shall be used.

PIPE SIZES

The pipe sizes shall be selected as under:-

- (i) Suction and delivery pipes of pumps shall be not less than following

Pump Discharge	Suction dia (mm)	Delivery dia (mm)
(a) 900 lpm	75	50
(b) 2280 lpm	150	150

- (ii) Pipe connecting pump house to ring main shall be not less than 150 mm diameter. Higher size pipe shall be selected depending upon length of pipe and friction loss.
- (iii) Down comer pipe size shall be of 100 mm dia.
- (iv) Where wet riser/down comers are not to be provided but hose reel and terrace tanks are to be provided, pipe of size 65 mm diameter shall be provided in between the pump and hose reel.
- (v) Fire service inlet and fire service connection shall be with pipe size not less than 150 mm diameter.
- (vi) All tee off connection for landing valve from vertical risers or from ring main for external hydrants shall be with pipe size not less than 80 mm dia.

Selection of Material: Components like landing valve, hose coupling branch pipes etc. are available in three material i.e. Aluminum Alloy, Gun metal and Stainless steel. Aluminum Alloy is prone to wear and tear and weather conditions faster than other two materials. However being cheaper, Aluminum Alloy may be used in location where chances of pilferage are more. Stainless steel may be considered at location not very safe from theft. Gunmetal may be used in installations which are well protected.

Hose Pipes/ Branch pipes: A minimum of two number of 63 mm diameter, 15 m long hose pipe with instantaneous coupling at both ends and one number branch pipe with nozzle shall be kept with every internal and external hydrant.

Orifice Plate: The pressure in a firefighting system varies from point to point. The pressure will be maximum in the pump house and minimum at the farthest hydrant at terrace level. To reduce pressure to safe operating pressure at every internal/external hydrant, orifice plates are provided before connection of landing valve between the flanges of landing valve and pipe flange. The size of orifice shall be calculated as per details given in

PIPE MATERIALS

Pipes shall be of the following materials:

- a) Mild steel heavy class (C-class) conforming to IS:1239 for sizes up to 150 mm.
- b) Welded black steel pipe, Class 2, conforming to IS: 3589, for sizes greater than 150 mm. These pipes shall be factory rolled and fabricated from minimum 6mm thick M.S. Sheet for pipes upto 350 mm diameter and from minimum 7 mm thick M.S. sheet for pipes of 400 mm diameter and above.
MS pipes may be allowed for extension of existing systems which are laid with CI pipes.
- c) Cast iron double flanged pipe, Class-A conforming to IS 1536 or IS: 1537 (to be provided only in underground application).
- d) (i) GI Pipe medium Class (B-class) conforming to IS:1239 (For Drain)
- (ii) Cadmium plated steel nuts/bolts/washers shall be used.
- (iii) Flex drop of stainless steel metallic pipe with mounting accessories, frame for installation on false ceiling.

PIPE JOINTS

- (i) Electric welding joints shall be provided in the M.S. pipe work. Flanged joints shall be provided for connections to valves, pumps, air vessels etc and also on straight lengths at suitable points to facilitate erection and subsequent maintenance.
- (ii) For connection of C.I. pipe, fittings shall also be of C.I heavy grade conforming to IS:1538. The flanges shall be smooth faced and neoprene gasket shall be provided. Where un-avoidable and to

connect under ground pipe with risers, M.S. pipe may be used in the form of distant pieces. The joint between C.I and M.S. pipe shall be flanged type. M.S. pipe laid at such locations shall be provided anti-corrosive treatment.

- (iii) Mild steel flanges shall be of IS:6392 i.e. “Plate Flanges for Welding” and flange thickness shall be as under. Gasket thickness shall not be less than 3 mm.

Pipe dia	Flange Thickness
200 mm	24 mm.
150 mm and 125 mm	22 mm
100 mm and 80 mm	20 mm
65 mm	18 mm
40 mm and below	16 mm

- (iv) Fittings installed underground shall be of cast iron ‘heavy’ grade conforming to IS 1538 whereas those installed above ground shall normally be of medium grade wrought steel or mild steel conforming to IS 1239 (Part 2) or malleable iron fittings conforming to IS 1879.
- (v) All hardware items such as Nuts, bolts, washers shall be of appropriate size. Washers shall be used on both sides of the bolt.

VALVES

Sluice valve conforming to IS:780 or butterfly valve conforming to IS:13095 shall be provided. All valves shall be suitable to with-stand the pressure in the system and rating shall be PN. 1.6. All valves shall be right handed (i.e. handle or key shall be rotated clock wise to close the valve), the direction of opening and closing shall be marked and an open/shut indicator fitted.

- (i) The materials of valves shall be as under:-
 Body – Cast Iron
 Disc – Cast Bronze or Stainless Steel
 Seat – Either integral or Nit rile rubber
 o-ring- Nit rile/Silicon.
- (ii) Non return valves shall be swing check type in horizontal run and lift check type in vertical run of pipes.
- (iii) Air release valves shall be gun metal body.

STRAINERS: Stainless steel strainers shall have minimum 1 mm thick screen with 3 mm perforations. Strainers shall be provided with flanges.

ORIFICE PLATE

Orifice plate shall be made of 6 mm thick stainless steel and shall have an identification tag projecting beyond any flange between which it is clamped. The orifice shall be plain central hole without burs and diameter not less than one half of the internal diameter of the pipe to which it is fitted.

INSTRUMENTS

- (i) Pressure gauge of appropriate range and 150 mm dia size shall be provided.
- (ii) The pressure gauge shall be duly calibrated before installation and shall be complete with shut off valve.

AIR VESSEL

Air vessel shall be provided on top of each riser and shall be fabricated out of 8 mm thick M.S. Sheet. The ends shall be dished. This shall be of 250 mm diameter, 1.2 m high and installed vertically on suitable legs. The legs shall be provided with M.S. Plate of size 75 mm x 75 mm x 5 mm at the bottom so that the legs do not puncture the roof. The legs shall be grouted in CC foundation. Flange connection shall be provided for connection with wet riser pipe. Air release valve and pressure gauge with shut off valve shall be provided. The air vessel shall be tested at 25 kgf/cm² pressure before installation.

INSTALLATION:

- (i) The installation work shall be carried out in accordance with the detailed drawings prepared by The contractor and approved by the Engineer-in-Charge.
- (ii) In pipe above ground level, expansion loops or joints shall be provided to take care of expansion or contraction of pipes due to temperature changes.
- (iii) Tee-off connections shall be through equal or reducing tees, otherwise ferrules welded to the Main pipe shall not be resorted to.
- (iv) Open ends of piping shall be blocked as soon as the pipe is installed to avoid entrance of foreign Matter.
- (v) Piping installation shall be supported on or suspended from structure adequately .
The contractor shall provide, clamps, hangers etc.
- (vi) Proper lines and levels shall be maintained while installing exposed pipes.
- (vii) Pipe supports in pump house shall be floor mounted and of mild steel/G.I spacing of pipe Supports shall not be more than that specified below:-

Nominal Pipe Size (mm)	Spacing (m)
20 and 25	2.00
32 and 125	2.50
150 and above	3.00

Extra supports shall be provided at the bends and at heavy fittings like valves to avoid undue stress on the pipes.

- (viii) Anti vibration pads, springs or liners of resilient and non-deteriorating material shall be provided at each support, so as to prevent transmission of vibration through the supports.
- (ix) Pipe sleeves of diameter larger than the pipe by least 50 mm shall be provided wherever pipes pass through walls and the annular spaces shall be filled with felt and finished with retaining rings.
- (x)
 - (a) Vertical risers shall be parallel to walls and column lines and shall be straight and in Plumb. Risers passing from floor to floor shall be supported at each floor by clamps.
 - (b) The space in the floor cut outs around the pipe work shall be closed using cement Concrete (1:2:4 mix) or steel sheet, from the fire safety considerations, taking care to see that a small annular space is left around the pipes to prevent transmission of vibration to the structure.
 - (c) Riser shall have suitable supports at the lowest point.
- (xi) Where mild steel pipes are to be buried under ground the top of the pipes shall be not less than 100 cms below the ground level. Where this not practicable, permission of the Engineer-in-Charge shall be obtained for burying the pipes at interval in Masonry or C.C. blocks shall be provided for supporting the pipes. After the pipes have been laid, the trench shall be refilled with the excavated soil in layers of 20 cm and rammed and any extra soil shall be removed from the site of work by the contractor.
- (xii) Underground pipe shall be laid at least 2 m. away from the face of the building preferably along the roads and foot paths. As far as possible laying of pipes under road, pavement and large open Spaces shall be avoided. Pipes shall not be laid under building and where unavoidable, these shall be laid in masonry trenches with removable covers.
- (xiii) To facilitate detection of leak and isolation of defective portion of pipe, valves shall be provided in underground pipe at suitable locations. As far as possible such valves shall be provided over ground. If the valves are to be provided below ground, suitable masonry chamber with cover plate shall be provided. Locations where vehicles can pass shall be avoided for provision of valve below ground.
- (xiv) Pipe over ground shall be painted in red colour. Suitable identification shall be Provided to indicate the run of under ground pipe wherever the route of underground pipe cannot be ascertained from the location of yard hydrant/isolating valves.
- (xv) It shall be made sure that proper noiseless circulation is achieved in the system. If proper Circulation is not achieved due to air-bound connections, the contractor shall rectify the defective connections. He shall bear all the expenses for carrying out the above rectification including the tearing up and refinishing of floors, walls, etc. as required.

PRESSURE TESTING

- (a) All piping shall be tested to hydrostatic test pressure of at least one and a half times the Maximum operating pressure, but not less than 10 Kg/Sq.cm for a period not less than 24 hours. All leaks and defects in joints revealed during the testing shall be rectified to the satisfaction of the Engineer-in-Charge.
- (b) Piping repaired subsequent to the above pressure test shall be re-tested in the same manner.
- (c) System may be tested in sections and such sections shall be securely capped.
- (d) Pressure gauges may be capped off during pressure testing of the installation.

PIPE SUPPORTS

For installing pipes vertically or horizontally inside the building standard pipe supports of reputed make shall be used. Following supports shall be used.

- (i) Split pipe support clamps with rubber lining for vertical, horizontal and roof hanging.
- (ii) Clevis Hangers for horizontal supports to adjust varying heights.

For pipes of size 100 mm and above, with the prior approval of Engineer-in-Charge, "U" clamp with dash fastener may be used for supporting horizontal pipe from ceiling.

MEASUREMENT

Measurement of plumbing work shall be on following basis:-

- (a) Piping shall be measured along the centre line of installed pipes including all pipe fittings and Accessories but excluding valves and other items for which quantities are specifically indicated in the schedule of work. No separate payment shall be made for fittings and accessories.
- (b) The rates for piping work shall include all wastage allowances, flanges, pipe supports, hangers, Excavation, refilling, testing , nuts and check nuts, vibration isolators, suspension where Specified or required and any other item required to complete the piping installation. None of These items will be separately measured and paid.

FIRE FIGHTING ACCESSORIES

1. LANDING VALVE

Landing valves are provided in the system for connection of hose pipes for discharging water for fighting fire by fire brigade b or trained personnel.

The landing valves shall be as per IS: 5290

1.1 The landing valves are of single and double head outlet types.

1.2 Material of construction:

- (i) Body, outlet and cap etc : Bronze or Aluminum alloy or stainless steel
- (ii) Spindle : Brass for Bronze body, stainless steel for Aluminum alloy and Stainless steel body.
- (iii) Hand wheel : Mild steel or cast iron.

2. INSTALLATION

(i) The landing valve shall be fitted to a T connection of the riser at the landing in such a way that the Valve is in the centre of the internal hydrant opening and at height of 900 m. from floor level.

(ii) The valve base shall be vertical and the valve facing outside. There should be no hindrance in Operation of the handle.

3. FIRST AID HOSE REEL

First aid hose reel is meant for delivering small quantity of water in early stage of fire and can be operated even by untrained personnel, and thus provides a most effective fire fighting facility. It consists of a length of 20 mm (nominal internal) diameter hose tubing warped around a reel with water. Inlet pipe, stop valve and shut off nozzle. The entire assembly is mounted on a wall bracket and can swing 180 degree. The water inlet is connected to the riser pipe by means of 37 mm socket and valve. The hose tube can be pulled out easily for the purpose of discharge of water on fire.

First aid hose reel shall be as per IS-884. The coupling branch pipe and nozzle shall be as per IS: 8090

Material of Construction:-

(i)	Hub and sides	:	Aluminum Alloy/Mild steel/Aluminum sheets.
(ii)	Wall Bracket	:	Cast iron/Mild steel.
(iii)	Hose tube (20 mm)		Thermoplastic (Textile Reinforced) Type-2 as per IS-12585 (Nominal internal dia)
(iv)	Nozzle with branch pipe	:	Brass
(v)	Stop Valve(Ball Valve)	:	Gun metal

Normally M.S. construction is used. Other materials may be used in areas having corrosive atmosphere. The water flow rate shall be not less than 24 lpm and the range of jet shall be not less than 6 m.

4. Installation

- (i) First aid hose reels are installed with internal hydrant space for which is provided as per where space is not provided, first aid hose reel shall be installed in suitable size MS cabinet made from 2 mm thick sheet with glass door. The cabinet shall be painted red. The size of the cabinet shall be such that there is no obstruction in swinging the hose reel. The location of cabinet shall be such that it does not form an obstruction in passage/escape route.
- (ii) The length of hose tube shall be such that the nozzle of the hose can be taken into every room and within a range of 6 m. from any part of the room.
- (iii) There shall be no obstruction in swinging the hose reel and should be installed above landing valve Where provided.
- (iv) The inlet valve shall be at 900 mm above floor level.
- (v) Hose reel bracket should be firmly grouted on the wall with the help of rawl bolts.

FIRE HOSE DELIVERY COUPLING BRANCH PIPE AND NOZZLES

These are important accessories used for fire fighting operations.

i. Material of Construction

- 1. Copper Alloy
- 2. Aluminum alloy
- 3. Stainless Steel

ii. Delivery Hose Coupling's

- a) The delivery hose couplings consist of male half coupling and female half coupling. Groves are Provided on outer side on both coupling for binding hose pipes with wires. In female coupling spring Loaded cam tooth is provided for holding male half coupling in position. Male half coupling and female half coupling are provided on both sides (i.e. on one side male and on other side female) of hose pipes. Two or more pipes can be joined together with the help of these couplings instantaneously.
- b) Sizes: - These are available in two sizes i.e. 63 mm and 70 mm. Normally size 63 mm is used.

- iii. **Branch Pipe and Nozzle:** - Branch pipes with nozzle are mounted at the end of hose pipe. Branch pipe is properly finished and free from sharp edges. During operation, a fireman has to hold the branch pipe. One end of branch pipe is fixed with hose coupling and the other end is threaded to fit the nozzle. Nozzle is tapered pipe with one end threaded internally which is fixed on branch pipe. The size of other End i.e. nozzle shall be 20 mm.(nominal internal diameter)

FIRE SERVICE INLET AND FIRE SERVICE CONNECTION

- (i) These are provided for connection of fire service hose pipes for either directly pressurizing the system their pumps or filling water in the tank from a distance. In the first case non return valve with butterfly valve shall be provided for holding water pressure. Fire service inlet shall be provided with each wet riser/down comer and the ring main.

(ii) **Material of Construction**

- a) Copper Alloy.
- b) Aluminum Alloy.

HOSE PIPES

Hose pipe shall be rubber lined woven jacketed and 63 mm in diameter. They shall conform to Type A (Reinforced rubber lined) of IS: 636. They shall be flexible and capable of being rolled. Length of hose pipe will be 15 m.

- i. The hose pipe shall be complete with male and female coupling at the ends.

ELECTRICAL WORK

GENERAL

- Unless otherwise specified in the tender specifications, all equipments and materials for Electrical works shall be suitable for operations on 415 V/240 V +/- 10%(3 phase/single phase) 50 Hz AC system.
- All electrical works shall be carried out complying Central Electricity Authority (Measures Relating To Safety and Electric Supply) Regulations, 2010 and NEC 2011, as amended up to date.
- All parts of electrical works shall be carried out as per appropriate CPWD General Specifications For Electrical works, namely Part 1 (internal) 2013, Part II (external) 1994 work all as amended to date.
- All materials and components used shall conform to the relevant IS specifications amended to Date.

POWER SUPPLY

Following 3 phases, 415 Volts, 50 Hz, supplies is to be arranged by agency free of cost for fire fighting installations.

- 1. Normal supply for fire pumps near under ground tank.

MOTORS

The motors shall be squirrel cage AC induction type. The motors shall be suitable for continuous duty and rating necessary to drive the pump at 150 percent of its rated discharge with at least 65 percent rated head. The motor shall be totally enclosed fan cooled type conforming to protection clause IP 21 of IS: 4691. The class of insulation shall be "F". The synchronous speed shall be 1500/3000 rpm as per requirement of the pump. The motor shall conform to IS: 325.

MOTOR STARTER

- (i) The motor starter shall conform to IS: 1822 "Motor starters of voltage not exceeding 1000 volts" and shall be air insulated and suitable for 415 V +/- 10%, 50 Hz, 3 phase AC supply and shall be Integrated in the panel.
- (ii) Starter for the motor shall be direct on line (D.O.L) for motors up to and including 7.5 H.P rating and automatic star-delta type for motors of higher ratings unless otherwise specified in the tender specifications.
- (iii) Each starter shall be provided with the following protections:-
 - (i) Thermal overload on all the three phases with adjustable settings.
 - (ii) Independent single phase preventor (current sensing type)
- (iv) Adequate number of extra NO/NC contacts for interlocks, indicating lamps, remote operation Etc. shall be provided on the starter/contractor.
- (V) Under voltage/ No volt trip shall not be provided.

CONTROL PANEL

- (i) The control panel shall be floor mounted cubical type compartmentalized panel board fabricated from 2 mm. thick CRCA sheet, phosphatised and powder coat painted, totally enclosed, dust and vermin proof, free standing, floor mounting type with suitable size cable alley and loose wire box, having suitable size Aluminium bus bar. The board shall be fabricated from 2.0 mm thick CRCA sheet and powder coated after 7 tank treatment process. The board shall be fabricated with

- IP 42 degree of protection for indoor and IP 54 degree of protection for outdoor. It shall be suitable for termination of the incoming/outgoings cable(s) from bottom/top.
- (ii) The capacity of switch gear shall be suitable for the requirements of motor fed/controlled. Starting currents shall be duly considered.
 - (iii) Switchgears & accessories shall be provided as specified for automatic operation of terrace fire pumps sensing the pressure drop in the down comer. Besides automatic operation of pumps, provisions for manual operation shall be incorporated.
 - (iv) Control panel shall house starters for motor with independent current sensing type Single phase preventor for each starter.
 - (v) Digital type measuring instruments like ammeter & voltmeter, Volt meter with selector switch, a set of indicating lamps and fuses for voltmeter and lamps shall be provided. Ammeter with CTs, and selector switch shall be provided with each motor starter. Instruments shall be flush mounted with the panel and have a class index not higher than 1.0. The instruments and accessories shall be provided whether or not specifically indicated in the tender specifications.
 - (vi) Care shall be taken to provide adequate clearances between phase bus bars as well as between Phase bus bars, neutral and earth.
 - (vii) Where terminations are done on the bus bars by drilling holes therein, extra cross section shall be provided for the bus bars. Alternatively, terminations may be made by clamping.
 - (viii) Provision shall be made for proper termination of cables at the switchboards such that there is no strain either on the cables, or on the terminators. Cables connected to the upper ties shall be duly clamped within the switchboard.
 - (ix) Identification labels shall be provided against each switchgear and starter compartment, using plastic / aluminum engraved labels.
 - (x) Metallic danger board conforming to relevant IS shall be fixed on each electrical panel.

POWER CABLING

- (i) Unless otherwise specified, the power cables shall be XLPE insulated, PVC outer sheathed Aluminum conductor, armoured cables 1100 V grade. The power cables shall be of 2 core for Single phase, 4 core for sizes up to and including 25 sq. mm, 3-1/2 core for sizes higher than 25 sq.mm for 3 phase. Alternatively, XLPE/PVC insulated copper cable (single core/multicore unarmoured) of grade 1100 V shall be used.
- (ii) Power cables shall be of sizes to meet the starting and running current of motors fed and shall be as approved by the Engineer-in-Charge, after taking into consideration the load, the length of cabling.
- (iii) Cables shall be laid in suitable metallic trays suspended from ceiling, or mounted on walls. Cable ducts shall not be provided in pump rooms. Cable trays shall be of perforated steel sheet with adequate structural strength and rigidity. Necessary supports and suspenders for cable trays shall be provided by the contractor as required.

CONTROL WIRING

- (i) Control wiring shall be done using ISI marked PVC insulated and PVC sheathed, 2.5 Sq.mm 250 V grade, armoured multi-core copper conductor cable. The control cable shall also be laid in the same manner as power cable.
- (ii) The number and size of the control cables shall be such as to suit the control system design adopted by the contractor as per OEM recommendation.
- (iii) Runs of control wires within the switchboard shall be neatly bunched and suitably supported/Clamped. Means shall be provided for easy identification of the control wires.
- (iv) Control wiring shall correspond to the circuitry/sequence of operations and interlocks approved By Engineer-in-Charge.

EARTHING

- i. Provision of earth electrodes and the type of earthing shall be as specified in the NIT.
- ii. The earth work shall be carried out in conformity with CPWD Specifications for Electrical Works (Part-I), Internal 2013.

- iii. The size of earth conductors for body earthing of equipments shall be 2 Nos 6 mm dia copper Wire/2 Nos 25 x 3 mm G.I strip.
- iv. Compression type glands shall be used for all terminations in the case of PVC/XLPE cables.

PAINTING

All panels shall be supplied with the manufacturer's standard finish painting or as indicated in the Schedule of Work.

TECHNICAL SPECIFICATIONS FOR AUTOMATIC SPRINKLER SYSTEM

1.0 SCOPE

The general requirement of selection, design, installation, testing, commissioning and maintenance of automatic sprinkler system for fire fighting in buildings used for other than industrial and storage purpose.

1.1 Reference: For additional information regarding definitions, planning, design, hydraulic calculations, Tables etc. following documents are to be referred to:-

- (i) IS:15105: Design and installation of fixed automatic sprinkler, Fire Extinguisher Systems- Code of Practice.
- (ii) IS: 9972: Specification for Automatic Sprinkler Heads for Fire Protection Service.

1.2 CLASSIFICATION OF OCCUPANCIES

Sprinklers are provided in industrial and non industrial buildings. The design of sprinkler installation depends upon type of occupancy. Buildings are categorized under the following classes for the purpose of designing the installations in IS 15105

- a) Light hazard class
- b) Moderate hazard class
- c) High hazard class
- d) Storage hazards.

For details of classifications, IS: 15105 is to be referred. Light Hazard Occupancies shall be understood as those with low fire loads and with materials within having low rates of heat release. Light Hazard Occupancies are of non-industrial type subject to the condition that "No single compartment greater than 210 m² are allowable within light hazard occupancies and such compartments shall be fire separated by walls having 30 min rating and doors. Otherwise the sprinkler system shall be designed as per Ordinary Hazard Occupancy."

Office buildings (excluding store rooms), education institutions, hospitals (excluding kitchens, stores, utilities), libraries, museums, nursing homes, prisons and residential apartments are classified under light hazard occupancies.

Airport terminal buildings, car parking areas within building or basement, departmental stores/retail shops are classified under ordinary hazard class.

In order to satisfy above conditions, all buildings classified under Light Hazard shall be designed under Ordinary Hazard class. Accordingly these specifications cover Ordinary Hazard class only.

COORDINATION

Award of Work: - Depending upon progress of building work, the work of fire fighting should be awarded well in time.

- i. **All make and model/technical specification with arrangement drawings as per site locality.**
- ii. Before handing over, the building is to be got inspected by the representative of Chief Fire Officer and local bodies. The building will be issued N.O.C. for occupation/possession only when all safety provisions including fire fighting work are complete to the satisfaction of Chief Fire Officer. As such, fire fighting work will be considered completed in all respect only when NOC is Issued by CFO or competent officer of local bodies.

INSTALLATION, TESTING AND COMMISSIONING

PREPARATION AND APPROVAL OF DRAWING:

After award of the work, the contractor has to prepare working drawings and submit To the Engineer-in-charge for approval. The work is to be executed as per approved drawings.

- 1) Site survey should be carried out in detail.
- 2) In addition to building plans, layout plan along with landscape plan/horticulture plan and other services plans should be consulted.
- 3) Pipe sizes are to be decided in accordance with provision as per CPWD specification.

INSTALLATION:

- 1) All valves shall be installed at a height and in a position that their operation by right hand is conveniently possible.
- 2) All pressure gauges should be installed so that the dial is vertical and is visible while entering the pump House.
- 3) Risers shall be parallel to the wall and in plumb. Adequate supports shall be provided from the wall. Opening around the pipe in slab shall be filled with CC and finished with plaster.
- 4) Internal hydrant shall be provided in the centre and facing out side for ease of operation. Sufficient Space shall be provided around the handle for operation. There shall be no hindrance in moving the first aid hose reel.
- 5) Terrace pipes shall be supported on CC pedestals of adequate height. The pipe route shall be such as no Hindrance is created in movement at the terrace. Pipes shall be sufficiently raised above terrace. It is to be ensured that water proofing is not damaged during laying of pipes.

TESTING:

Initial Testing

- 1) During laying of pipes, the same shall be subjected to 10 Kg/cm² hydraulic pressure for a period of 24 Hours, in sections.
- 2) After completion of the work, all valves/fittings shall be installed in position and entire system shall be tested for 24 hours at a pressure of 10 Kg/cm². The drop of pressure up to 0.5 Kg/cm² shall be accepted.

Final Testing

- 1) After completion, all operation checks shall be carried out for automatic operation of the systems. For this purpose, landing valves may be opened at different locations. The exercise shall be repeated couple of times to ensure trouble free operation of the system.
- 2) **Flow Test:** - The design flow of pumps shall be checked. The pump shall be operated after opening a number of landing valves at different locations. Design pressure is to be maintained in the pump House. Water discharge is to be measured by drop in level in UG tank for a certain period. All pumps shall be tested one by one. The flow rate shall be not less than as specified while maintaining the design pressure in pump house.

COMMISSIONING:

Flushing the System: Before commissioning, the entire system shall be flushed to ensure that any earth/foreign matters which might have entered during installation are taken out. For this, pump may be operated and valves opened at different locations.

- 1) As soon as the work is complete, the system shall be commissioned and made available for use. Requirement of fire fighting installations is equally important during occupation of the building. If the building is to be occupied in part, fire fighting system of building completed shall be commissioned by isolating the system of under construction portion of the building.
- 2) The fire fighting system shall be maintained and manned from the very first day of its commissioning.
- 3) Any defects noticed during the warranty period shall be promptly attended by the contractor and availability of the system at all time is to be ensured.

TECHNICAL SPECIFICATION FOR FIRE EXTINGUISHERS

ITEM NO.	PARAMETER	SPECIFICATIONS AS PER NIT
I	CO2 Type Fire Extinguisher	
1	Conforming IS	IS: 15683
2	Capacity	4.5 Kg
3	Filling Ratio	0.66
4	Type	Portable
5	Expellant	Self
6	Efficiency Discharge	Minimum 95%
7	Discharge Time	More Than 8 Sec & 15 Sec
8	Throw	Minimum 2 Mtrs. for 4.5 Kg
9	Operating Position	Upright
10	Operating Valve	Wheel / Squeeze Grip type
11	Operating Temperature Range	-30 Deg C To +55 Deg C
12	Fire Rating	21B, C
II	ABC Type Fire Extinguisher	
1	Conforming IS	IS: 15683
2	Capacity	6 Kg
3	Anti Corrosive Inhibitor	Epoxy Polyester Powder Coating
4	Type of Extinguisher	Constant Pressure
5	Type of Extinguishing Media	Dry Powder As per IS 14609
6	Expellant	Pressurized with N2 Gas
7	Efficiency Discharge	Minimum 85%
8	Jet Length	More than 2 Mtrs.
9	Discharge Time	More Than 13 Sec
10	Hydraulic test Pressure	35 Kgf/Cm2
11	Operating Position	Upright
12	Charged Pressure	15 Kgf/Cm2
13	Operating Temperature Range	-10 Deg C To +55 Deg C
14	Operating Valve	Squeeze Grip type with hose
15	Fire Rating	3A, 34B, C
III	Clean Agent Type Fire Extinguisher	
1	Conforming IS	IS: 15683
2	Capacity	6 Kg
3	Type of Extinguisher	Constant Pressure
4	Valve Type	Squeeze Grip Type with Nozzle
5	Efficiency Discharge	Minimum 95%
6	Operating Position	Upright
7	Expellant	Pressurized with N2 Gas
8	Extinguisher Media	HFC 236 fa
9	Operating Temperature Range	-0 Deg C To +55 Deg C
IV	Electrical Matting	
1	Conforming IEC	IEC 61111
2	Class	Class - 1 PV tested upto 10 KV

TECHNICAL SPECIFICATION OF E&M WORK

- i) The work shall be carried out in conformity with CPWD General specification Part – I (Internal) 2023 and CPWD General specification Part – II (External) 2023 for electrical works as amended up to date and as per instructions of the Engineer-in-Charge of the work wherever the specification is silent relevant. Indian standard specifications are to be followed.
- i) Wherever makes of materials are not mentioned in the schedule of work/additional condition & specification of the work, the contractor shall quote clearly the make of materials in his tender. If it is not mentioned so, makes of the materials shall be decided by the Executive Engineer (E), & decision of the Engineer in Charge shall be final & binding.
- ii) The contractor will make his own arrangement for storage of material arranged by him, and material issued from the department. The material, if issued, shall be issued to him from store of the Junior Engineer (E). The watch and ward of the materials and of the installations would be responsibility of the contractor till the work is completed & handed over to the client department. Nothing extra shall be paid to the contractor on this account. The contractor shall make his own arrangement for carriage of materials, etc. issued to him departmentally from the site store to the site of work at his own cost. Nothing extra shall be paid on this account.
- iii) All the material should be ISI marked wherever not specified, if ISI marked material is not available it should be conforming to BIS specification amended up to date, approval of Engineer in Charge in such case shall be final & binding to contractor.
- v) The field units may also pursue with contractors of the existing contract to make payment to the labour by contractor through Bank or ECS or online transfer also.
- vi) The Lowest tenderer shall submit, along with the performance guarantee after the acceptance of tender, an undertaking from the OEM vide **OM No.DG/MISC.(ELECT.)/1 dated 30.03.2017**.
 - a) Authorization certificate.
 - b) The OEM shall unconditionally support the lowest tenderer technically throughout the execution of contract as well as for Maintenance/comprehensive maintenance contract for the useful life of the system.
 - c) OEM shall provide all the spares required for healthy functioning of the equipment for at least seven years from the date of supply of equipment.
- vii) Acceptable makes of materials to be used in the work are as under. However approval of the makes of material out of acceptable make shall be got from Engineer-in-Charge.

ACCEPTABLE MAKES OF MATERIAL FOR FIRE FIGHTING SYSTEM WORK

Sl. No.	Item	Acceptable makes
1.	Pump	Kirloskar / Crompton / Wilo (Mather & Platt) / KSB
2.	Motor	Kirloskar / Siemens / Crompton / ABB
3.	GI / MS Pipe	Jindal (Hissar) / Tata / Sail (ISI Marked)
4.	Sluice / Butterfly / Non Return / Ball Valves	Sant / Honeywell / Kirloskar / Advance / KSB - ISI Marked
5.	Pressure Switch / Pressure Gauge	Danfoss / Indofoss / Feibig / H. Guru / Marsh / Japson / Rapid Control / System Sensor
6.	Internal / External Hydrant / First Aid Hose Reel / Hose Pipe / Fire Brigade Inlet etc.	Life Guard / Newage / Getech / Omex (ISI Marked)
7.	Sprinkler	Life Guard / Safe Guard / Omex / Duntop / Tyco / HD
8.	Fire Extinguisher and Accessories	Life Guard / Getech / Omex / Fire Shield / Minimax / Ceasfire
9.	LT Cable / FRLS PVC insulated copper conductor (ISI Marked)	Polycab / RR Kabel / Havells / Finolex / KEI
10.	Cable Jointing Kit / End termination / Lugs / Gland	Raychem / Dowells / 3M / Hex / Polycab
11.	Conventional Fire Alarm Panel, Manual Call Points, Hooter / Sounder, etc.	Honeywell / Agni / Apollo / Siemens / ASES
12.	Fire Control Panel (Indoor / Outdoor) (CPRI Approved)	SPC Electrotech / Ambit / Tricolite / Adlec / Milestone / Advance Panels & Switchgears (P) Ltd. / Meditron / Aarnav Powertech / R. P. Controls / Steck Power / S. K. Engineering
13.	Selector Switch	ABB / Siemens / Schneider / Legrand / L&K / Kaycee / BCH
14.	Digital type Ammeter / Voltmeter / Multifunction meter	ABB / Siemens / Schneider / Legrand / L&K / Automatic Electric / Kappa
15.	LED Type Indicating Lamps	ABB / Siemens / Schneider / Legrand / L&K
16.	Push Buttons	ABB / Siemens / Schneider / Legrand / L&K
17.	Control fuses with base	Siemens / BCH / L&K / GE
18.	CT / PT	As per manufacturer's practice.

Note: -

- (1) Manufacturing test certificates for all major equipments/materials etc are required at the time of supply and the year of manufacturing should be current. Materials of old manufacturing date (more than six months) will not be accepted.
- (2) Make and model of the material shall be got approved from engineer-in-charge of minor component before placing the order.
- (3) The firm has to get prior approval in writing from the engineer-in-charge of minor component before placing order to the manufactures or their authorized dealer.
- (4) Material like transformers, panels, Bus trunking, cables etc., shall be procured at the right stage not very prior to be same to be used.
- (5) All material should be used ISI marked (as applicable)
- (6) Public Procurement (Preference to Make in India) order 2017 issued by competent authority of Government of India shall be implemented during selection of materials and execution of work accordingly.

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN

- 1] M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]
And
- 2] M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth, called Associated Contractor]

Name of work:- Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand).

(SH:.....).

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended upto date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.
- 2- All the material, machinery and equipments, tools and tackles required for execution of the electrical works. As per agreement shall be the responsibility of the associated contractor.
- 3- The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.

SIGNATURE OF MAIN CONTRACTOR

SIGNATURE OF ASSOCIATED ONTRACTOR

Date

Date

Place

Place

COUNTER SIGNED

EE(E)/EE(C)

WILLINGNESS CERTIFICATE

Name of work: Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand).

(SH:.....).

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-Charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Date:

Signature of Contractor

PART – C

(Civil Works)

PROFORMA OF SCHEDULES

(Separate Performa for Civil & Elect. Works in case of composite Tenders)
(Operative Schedules to be supplied separately to each intending tenderer)

SCHEDULE 'A'

Schedule of quantities (as per PWD-3) :

Attached

SCHEDULE 'D'

Extra schedule for specific requirements/document for the work, if any:

AS PER ADDITIONAL SPECIFICATIONS, ACCEPTABLE MAKES OF MATERIALS ATTACHED WITH SCHEDULE OF WORK

SCHEDULE 'E'

Reference to General Conditions of contract.	GCC construction works – 2023 Construction work shall be made Part of Agreement	
Name of work	Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting services).	
Estimated cost of work	AS PER SCHEDULE 'F' OF PART 'A'	
(i)	Earnest money	AS PER SCHEDULE 'F' OF PART 'A'
(ii)	Performance Guarantee	AS PER SCHEDULE 'F' OF PART 'A'
(iii)	Security Deposit	2.5 % of tendered value of Part 'C' Civil work.

SCHEDULE 'F'

GENERAL RULES & DIRECTIONS:

Officer inviting tender :		AS PER SCHEDULE 'F' OF PART 'A'
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 (Refer Clause-12)
Definitions:		
2(v)	Engineer-in-Charge :	EXECUTIVE ENGINEER - RANCHI PROJECT, CPWD, HINOO, RANCHI
2(viii)	Accepting Authority:	AS PER SCHEDULE 'F' OF PART 'A'
2(x)	Percentage on cost of materials and labour to cover all overheads and profits :	15%
2(xi)	Standard Schedule of Rates	Civil:- DSR - 2023 with up to date correction slips up to last date of submission of bids.
2(xii)	Department	Central Public Works Department
9(ii)	Standard CPWD contract Form GCC 2023, CPWD Form 7/8 as modified & corrected up to	AS PER SCHEDULE 'F' OF PART 'A'

Clause 1

(i)	Time allowed for submission of Performance Guarantee, Programme Chart (Time and Progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board or Proof of applying thereof from the date of issue of letter of acceptance	AS PER SCHEDULE 'F' OF PART 'A'
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(ii)	Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above :	AS PER SCHEDULE 'F' OF PART 'A'
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Clause 2

Authority for fixing compensation under clause 2 :	AS PER SCHEDULE 'F' OF PART 'A'
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Clause 5

Time allowed for execution of work	AS PER SCHEDULE 'F' OF PART 'A'
Number of days from the date of issue of letter of acceptance for reckoning date of start	

Mile stone(s) as per table given below:-

Sl. No.	Description of Milestone (Financial)	Time allowed in Days (from date of start)	Amount to be withheld in case of non achievement of milestone (Civil and/or electrical Tender Amount)
1.	Financial progress of the total cost 25%		In the event of not achieving the necessary milestones as assessed from mile stone chart, 1.25% of the tendered value of work will be withheld for failure of each mile stone
2.	Financial progress of the total cost 50%		
3.	Financial progress of the total cost 75%		
4.	Complete work including handing over to the Client Department.		

Time allowed for execution of work

AS PER SCHEDULE 'F' OF PART 'A'

Authority to decide:

(i)	Extension of time	:	AS PER SCHEDULE 'F' OF PART 'A'
(ii)	Rescheduling of mile stones	:	AS PER SCHEDULE 'F' OF PART 'A'
(iii)	Shifting of date of start in case of delay in handing over of site.	:	AS PER SCHEDULE 'F' OF PART 'A'

PERFORMA OF SCHEDULE Clause 5 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		
Part B	Portions with encumbrances		
Part C	Portions dependent on work of other agencies		

Clause 6

Mode of measurement: Computerised Measure Book (CMB) / Electronic Measurement Book (EMB)	CMB/EMB
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Clause 7

Gross work to be done together with net payment/adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment	Rs.2,00,000/-
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Clause 7A

Whether Clause 7A shall be applicable -	Yes
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Clause 8A

Authority to decide compensation on account if contractor fails to submit completion plans.	AS PER SCHEDULE 'F' OF PART 'A'
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Clause 10A

List of testing equipment to be provided by the Contractor at site lab. As per CPWD Quality Assurance Manual - 2022, Annexure - 35.

Clause 10 B(ii)

Whether Clause 10 B (ii) shall be applicable	Not Applicable
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Clause 10 C

Component of labour expressed as percent of value of work	Not Applicable
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Clause 10 CC	Not Applicable
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Clause 11

Specifications to be followed for execution of work	CPWD Specifications 2019 volume-I & II with correction slips up to last date of submission of bid.
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Clause 12

Authority to decide deviation up to 1.5 times of tendered amount	AS PER SCHEDULE 'F' OF PART 'A'
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12.2 & 12.3		Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for building work	100% (Hundred percent)
12.4	(i)	Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for foundation work (except items mentioned in earth work sub-head in DSR and related items)	100% (Hundred percent)
	(ii)	Deviation Limit for items mentioned in earth work sub-head of DSR and related items.	100% (Hundred percent)

Clause 16

Competent Authority for deciding reduced rates	AS PER SCHEDULE 'F' OF PART 'A'
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Clause 18

List of mandatory machinery, tools & plants to be deployed by the contractor at site:-

1	Excavator cum loaders (JCB 3D model or equivalent)-01 No.	2	Bar Bending Machine – 01 No.	3	Bar Cutting Machine - 01 Nos.
4	Needle Vibrator- 01 Nos				

Any other machinery required for completion of the work as per decision of Engineer-in-Charge - As per actual requirement

Clause 19 C	-	AS PER SCHEDULE 'F' OF PART 'A'
Clause 19 D	-	AS PER SCHEDULE 'F' OF PART 'A'
Clause 19 G	-	AS PER SCHEDULE 'F' OF PART 'A'
Clause 19 K	-	AS PER SCHEDULE 'F' OF PART 'A'

Clause 25

Settlement of Dispute by Conciliation and Arbitration	AS PER SCHEDULE 'F' OF PART 'A'
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Clause 32

Requirement of Technical Representative(s) and recovery Rate	AS PER SCHEDULE 'F' OF PART 'A'
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Clause 38

(i)	(a)	Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates 2021 printed by CPWD.	
(ii)		Variations permissible on theoretical quantities:	
	(a)	Cement, For works with estimated cost put to tender not more than Rs. 25 lakh.	3% plus/minus
	(b)	Bitumen All Works	2.5% plus & only & nil on minus side.
	(c)	Steel Reinforcement and structural steel sections for each diameter, section and category	2% plus/minus
	(d)	All other materials	Nil

PART-C1

ADDITIONAL CONDITIONS

1. Unless otherwise specified, CPWD Specifications 2019 volume I&II with up to date corrections slips shall be followed in general. Any additional item of work, if taken up subsequently, shall also conform to the relevant CPWD specifications mentioned above. 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 items as given in Schedule of quantities.
 - ii) Additional conditions
 - iii) Additional specifications.
 - iv) General Conditions of Contract for CPWD works 2023 with up to date correction slip and CPWD Specifications.
 - v) I.S. Codes.
 - vi) Decision of Engineer-in-Charge.

2 INSPECTION OF SITE

The Contractors are advised to inspect and examine the site and its surroundings and satisfy themselves with the nature of site, the means of access to the site, the constraints of space for stacking material / machinery, labour etc. constraints put by local regulations, if any, weather conditions at site, general ground / subsoil conditions etc. or any other circumstances which may affect or influence their tenders.

- 3 The Contractor shall, if required by him, before submission of the tender, inspect the drawings in the Office of the Engineer-in-Charge. The Department shall not bear any responsibility for the lack of knowledge and also the consequences, thereof to the Contractor. The information and data shown in the drawings and mentioned in the tender documents have been furnished, in good faith, for general information and guidance only. The Engineer-in-Charge, in no case, shall be held responsible for the accuracy thereof and / or interpretations or conclusions drawn there from by the Contractor and all consequences shall be borne by the Contractor. No claim, whatsoever, shall be entertained from the Contractor, if the data or information furnished in tender document is different or in-correct otherwise or actual working drawings are at variance with the drawings available for inspection or attached to the tender documents. It is presumed that the Contractor shall satisfy himself for all possible contingencies, incidental charges, wastages, bottlenecks etc. likely during execution of work and acts of coordination, which may be required between different agencies. Nothing extra shall be payable on this account.

- 4 Unless otherwise specified in the schedule of quantities, the rates of all items of work shall be considered as inclusive of executing all work, wherever required, in or under water and / or liquid mud, including bailing out water encountered from any source such as rain, floods, tides ingress of water through pressure relieving sleeves left during PCC at base, sub- soil water table being high and / or any other source whatever. During entire execution of work, the contractor shall carry out dewatering (at his own cost), as and when required or specified herein. Nothing extra shall be payable on this account.

- 5 The nomenclature of the item given in the schedule of quantities gives in general the work content but is not exhaustive i.e. does not mention all the incidental works required to be carried out for complete execution of the item of work. The work shall be carried out , all in accordance with true intent and meaning of the CPWD Specifications and the drawings taken together, regardless of whether the same may or may not be particularly shown on the drawings and / or described in the Specifications, provided that the same can be reasonably inferred there from. There may be several incidental works, which are not mentioned in the nomenclature of each item but will be necessary to complete the item in all respect.

All these incidental works / costs which are not mentioned in item nomenclature but are necessary to complete the item shall be deemed to have been included in the rates quoted by the contractor for various items in the schedule of quantities. No adjustment of rates shall be made for any variation in quantum of incidental works due to variation / change in actual working drawings. Also, no adjustment of rates shall be made due to any change in incidental works or any other deviation in such element of work (which is incidental to the items of work and are necessary to complete such items in all respects) on account of the directions of Engineer-in-Charge. Nothing extra shall be payable on this account.

6 Unless otherwise provided in the Schedule of Quantities, the rates quoted by the Contractor shall be inclusive of carrying out the works at and / or upto all heights, lifts, leads and depths. The contractor shall make all arrangements for the same. Nothing extra shall be payable on this account.

7 Accommodation for labour huts, site office, stores, installation of batching plant etc. will be given at site as per availability only. In case, space is not available at the site of work, Contractor shall make his own arrangements to provide such accommodation as per the rules of the local bodies. He shall make his own arrangements for stores, field office etc. Before tendering, he shall visit the site and assess the manner in which he is able to arrange the above facilities. The Engineer-in-Charge shall in no way be responsible for any delay on this account and no claim, whatsoever, on this account shall be entertained. Nothing extra shall be payable on this account.

8 **SUBMISSIONS IMMEDIATELY AFTER AWARD OF WORK**

The Contractor shall submit the following details immediately after award of work.

- a. List of Equipments proposed to be deployed for this work.
- b. Site organization chart with Bio-data of Project Manager and Key Personnel proposed to be deployed at site.
- c. A certified copy of Power of Attorney in the name of person who has signed the tender document.
- d. The details of shuttering and scaffolding material proposed to be used to complete the entire R.C.C structural work commensurate with overall stipulated period for completion of work.
- e. The contractor shall prepare and submit a tentative integrated Bar Chart (for Civil and E & M services) clearly indicating the various activities, in a manner to complete the entire work covered under this tender within the stipulated period.

9 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. The contractor shall adhere to all the rules & regulations and byelaws laid down by local Bodies and any other statutory bodies, during the execution of work. The Contractor shall also adhere to all traffic restrictions notified by the local authorities. 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.

10 Royalty at the prevalent rates shall be paid by the Contractor or the RMC supplier 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.

- 11** No foreign exchange shall be made available by the Department for importing (purchase) of equipments, 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.
- 12** 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.
- 13** **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, Sub-Contractors and specialized agencies. Nothing extra shall be payable on this account.
- 14** **INTEGRATED SERVICE DRAWINGS**
The contractor shall prepare following drawings for various civil and electrical services showing details of lay out plan including sectional elevations and submit the same for the approval of Engineer-in-Charge.
- a) Plumbing drawings GI and CI line
 - b) Layout of conduits, switchboard, Distribution boxes etc.
- Subsequently Integrated drawings shall be prepared and submitted by the Contractor as per local Byelaws and as per the site conditions to facilitate convenient installation as well as maintenance. Nothing extra shall be payable on this account.
- 15** **PROTECTIVE / SAFETY MEASURES**
Necessary protective and safety equipments shall be provided to the Site Engineer, workers & Supervisory staff by the Contractor at his own cost and to be used at site.
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 equipments, 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 equipments 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 equipments, 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, equipments 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.
- 16** **DISPLAY PERMISSIONS**
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.

17 REMOVAL OF ‘MULBA’ ETC. FROM SITE

The Contractor shall not stack building material / mulba / muck on any other land outside site barricading. The muck, rubbish etc. shall be removed periodically as directed by the Engineer-in-Charge, from the site of work to the approved dumping grounds as per the local byelaws and the Contractor shall obtain regulations of the concerned authorities and all necessary permissions in this regard from the local bodies. Nothing extra shall be payable on this account. The contractor shall be liable to pay any charges/penalties as may be levied by local bodies. The Engineer –in-Charge shall be at liberty to recover, such sums due but not paid to the concerned authorities on the above counts, from any sums due to the Contractor including amount of the Security Deposit and performance guarantee in respect of this contract agreement.

18 TOOLS AND PLANTS

The Department shall supply no tools and plants including any special T&P etc. 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.

19 COORDINATION WITH OTHER AGENCIES

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.

20 FACILITIES BY THE CONTRACTOR TO THE OTHER CONTRACTORS / AGENCIES

The Contractor shall cooperate with and provide the facilities to the sub Contractors and other agencies working at site for smooth execution of the work. The Contractor shall

- a) Allow use of scaffolding, toilets, sheds etc.
- b) Properly co-ordinate their work with the work of other contractors.
- c) Provide control lines and benchmarks to his Sub-Contractors and the other Contractors.
- d) Provide electricity and water at mutually agreed rates.
- e) Provide hoist and crane facilities for lifting material.
- f) Co-ordinate with other Contractors for leaving inserts, making chases, alignment of services etc. at site.
- g) Adjust work schedule and site activities in consultation with the Engineer-in-Charge and other Contractors to suit the overall schedule completion.
- h) 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.

21 The site of work shall be always kept clean due to constraints of space and to avoid any nuisance to the users of buildings in the adjacent plots. The Contractor shall take all care to prevent any water- logging at site. The wastewater, slush etc. shall not be allowed to be collected at site. It may be directly pumped into the creek with prior approval of the concerned authorities. For discharge into public drainage system, necessary permission shall be obtained from relevant authorities after paying the necessary charges, if any, directly to the authorities. The work shall be carried out in such a way that the area is kept clean and tidy. All the fees/charges in this regard shall be borne by the Contractor. Nothing extra shall be payable on this account.

22 PREVENTION OF NUISANCE AND POLLUTION

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 equipments 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 what so ever 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 first hand information of site constraints. Accordingly, they should quote their tenders. Nothing extra shall be payable on this account.

23 SCAFFOLDING

Wherever required for the execution of work, all the scaffolding shall be provided and suitably fixed, by the Contractor. It shall be provided strictly with steel double scaffolding system, suitably braced for stability, with all the accessories, gangways, etc. with adjustable suitable working platforms to access the areas with ease for working and inspection. It shall be designed to take all incidental loads. It should cater to the safety features for workmen. Nothing extra shall be payable on this account. It shall be ensured that no damage is caused to any structure due to the scaffolding.

- 24** The Contractor shall maintain all the work in good condition till the completion of entire work. The Contractor shall be responsible for and shall make good, all damages and repairs, rendered necessary due to fire, rain, traffic, floods or any other causes. The Engineer-in-Charge shall not be responsible for any claims for injuries to person/workmen or for structural damage to property happening from any neglect, default, want of proper care or misconduct on the part of the Contractor or of any other of his representatives, in his employment during the execution of the work. The compensation, if any, shall be paid directly to the Department / authority / persons concerned, by the Contractor at his own cost.
- 25** 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 laborers 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.
- 26** 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.
- 27** The Contractor shall render all help and assistance in documenting the total sequences of this project by way of photography, slides, audio / video recording etc. Nothing extra shall be payable to Contractor on this account. However, cost of photographs, slides, audio / videography 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.

- 28 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.
- 29 **INCIDENTAL CHARGES**
For all items of work, the entire incidental charges of any kind including cartage, storage, wastage and safe custody of material etc. shall be borne by the Contractor and no claim of any kind, whatsoever, shall be entertained on this account.
- 30 **STORAGE OF MATERIAL AT SITE**
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.
- 31 **NO WAIVING OF LEGAL RIGHTS AND POWERS**
The Engineer-in-Charge shall not be precluded or stopped from taking any measurements, and framing of estimates or detaining any certificates made either before or after the completion and acceptance of the work and payment, from showing the true amount and character of the works performed and materials furnished by the Contractor and from showing that any such measurements, estimates or certificates untrue or incorrectly made and that Engineer-in-Charge shall not be precluded or stopped from recovering from the Contractor such damages as it may be sustained by reasons of his failure to comply with the terms and conditions of the contract.
- 32 **FINAL TESTING OF THE INSTALLATION**
The Contractor shall demonstrate trouble free functioning of all the Civil and E & M installations and services. The Engineer-in-Charge or his authorized representatives shall carry out final inspection of the various Civil and E & M services and installations. Any defect(s) noticed during demonstration shall be rectified by the Contractor at his own cost to the entire satisfaction of the Engineer-in-Charge. Nothing extra shall be payable on this account.
- 33 Unless otherwise provided in the Schedule of quantities, the rates of tendered by the contractor shall be all inclusive and shall apply to all heights, lifts, leads and depths of the building and nothing extra shall be payable to him on this account. Payment for centering, shuttering, however, if required to be done for heights greater than 3.5 m shall be admissible at rates arrived at in accordance with clause 12 of the agreement if not already specified.
- 34 The contractor shall make his own arrangements for water and for obtaining electric connections if required and make necessary payments directly to the department concerned.
- 35 Other agencies doing work related with this project will also simultaneously executed the works and the contractor shall afford necessary facilities for the same. The contractor shall leave such necessary holes, openings etc. for laying, burying in the work pipes, cables, conduits, clamps, boxes and hooks for fan clamps, etc. as may be required for other agencies conduits for Electrical wiring/cables will be laid in a way that they leave enough space for concreting and do not adversely affect the structural members. Nothing extra over the agreement rates shall be paid for the same.
- 36 Some restrictions may be imposed by the security staff etc. on the working and for movement of labour, materials etc. The contractor shall be bound to follow all such restrictions/instructions and nothing extra shall be payable on this account.

- 37 (a) The building for components will be carried out in the manner complying in all respect with the requirements of relevant by laws of the local body under the jurisdiction of which the work is to be executed or as directed by the Engineer-in-Charge and nothing extra will be paid on this account.
- (b) The contractor shall comply with proper and legal orders and directions of the Local or Public authority or Municipality and abide by their rules and regulations and pay all fees and charges, which he may be liable.
- 38 The contractor shall give a performance test of the entire installation(s) as per standing specifications before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for the test.
- 39 Any cement slurry added over base surface (or) for continuation of concreting for better bond is deemed to have been built in the items and nothing extra shall be payable (or) extra cement considered in consumption on this account.
- 40 Testing of materials:
- Samples of various materials required for testing shall be provided free of charge by the Contractor including its transportation to testing laboratories. **The cost of tests for all materials shall be borne by the Contractor. The test shall be carried out by the contractor from the approved laboratory.**
- Testing of materials shall only be got conducted from any Government Testing Labs as per direction and decision of the Engineer-in-charge. However, in case of exigencies of some works, testing may be permitted from the approved Private Labs (NABL Accredited only) other than Government Testing Labs on written request by the Contractor and duly approved by the NIT approving authority in writing. However, permission for testing materials from Private Labs (NABL Accredited only) depends solely at the discretion of the NIT approving authority.
- 41 The Structural and Architectural drawings shall be all times be properly co-related before executing any work. However, in case of any discrepancy in the item given in the schedule of quantities, appendent with the tender and Architectural drawings relating to the relevant item, the former shall prevail unless and otherwise given in writing by the Engineer-in-Charge.
- 42 For the purpose fo recording measurements and preparing running account bills, the abbreviated nomenclatures indicated in the publications “Abbreviated nomenclature of item of DSR’2023” with up to date correction slips shall be accepted. The abbreviated nomenclature shall be taken to cover all the materials and operations as per the complete nomenclature of the relevant items in the agreement and other relevant specifications. In the case of items for which abbreviated nomenclature is not available in the above cited publication and also in case of extra and substituted items of works for which abbreviated nomenclature is not provided in the agreement, the full nomenclature of the items shall be reproduced in the measurement books and bill forms for running account bill. The full nomenclature of the items shall be adopted in preparing abstract of final bill form in the measuremet book and also in the bill form for final bill.
- 43 Public Procurement (Preference to Make in India) order 2017 issued by competent authority of Government of India shall be implemented during selection of materials and execution of work accordingly.
- 44 Agency shall ensure availability of mining materials and procure the same in advance. No claim shall be entertain on account of non availability of mining materials (sand ,stone chips etc.) monsoon.
- 45 Ageny shall quote their rate considering 18% GST on work contract.

SPECIAL CONDITIONS

1. The contractor shall not store/dump construction material or debris on metalled road.
2. The contractor shall get prior approval from Engineer-in-charge for the area where the construction material or debris can be stored beyond the metalled road. This area shall not cause any obstruction to the free flow of traffic/inconvenience to the pedestrian. It should be ensured by the contractor that no accidents occur on account of such permissible storage.
3. The contractor shall take appropriate protection measure like raising wind breakers of appropriate height on all sides of the plot/area using CGI sheets or plastic and/or other similar material to ensure that no construction material dust fly outside the plot area.
4. The contractor shall ensure that all the truck or vehicle of any kind which are used for construction purpose/or are carrying construction material like cement, sand and other allied material are fully covered. The contractor shall take every necessary precaution that each vehicle is properly cleaned and dust free to ensure to exit for their destination and also it is to be ensured that no dust, sand or any other particles are released in air to pollute.
5. The Contractor shall provide mask to every worker on the construction site and hand gloves specially who are involved in loading, unloading and carriage of construction material and construction debris to prevent inhalation of dust particles and injury respectively.
6. The contractor shall provide all medical help, investigation and treatment to the workers involved in the construction of building.
7. The contractor shall ensure that C&D waste is transported to the C&D waste site only and due record shall be maintained by the contractor.
8. The contractor shall compulsorily use of wet jet in grinding and stone cutting.
9. The contractor shall comply all the preventive and protective environmental steps as stated in the MoEF guidelines, 2010.
10. The contractor shall carry out on-Road-inspection for black smoke generating machinery. The contractor shall use cleaner fuel.
11. The contractor shall ensure that all DG sets comply emission norms notified by MoEF.
12. The Contractor shall use vehicles having up to date pollution control certificate.
13. The Contractor shall ensure that the construction material is covered by tarpaulin. The contractor shall take all other precaution to ensure that no dust particles are permitted to pollute air quality as a result of such storage.
14. Unless otherwise specified in the schedule of quantities, the rates for respective items shall be all inclusive and apply to the following: -
 - a) All lifts & all heights, floors including terrace, leads and depths.
 - b) All labour, material, tools and plants and other inputs involved in the execution of the item.
 - c) Any of the conditions and specifications mentioned in the tender documents.

- d) Pumping / bailing out surface water / rain water / sub soil water, if necessary for any reason.
 - e) Providing sunk flooring in bath-rooms, kitchen, etc.
 - f) Any legal or financial implications resulting out of disposal of earth, if any.
 - g) Payment of Royalty at the prevailing rates, if any, on the earth, boulders, metal, shingle, sand and bajri etc. or any other material collected by him for the work shall be made direct to revenue authorities. The proof for deposition of royalty amount have to be submitted in the office of Engineer-in-Charge. If the agency fails to submit such proof before every running account bill, then amount as per prevailing rate will be deducted from running account bill and will be deposited in the concerned office by the Engineer-in-charge.
 - h) Performance test of the entire installation(s) before the work is finally accepted.
 - i) Any cement slurry added over base surface (or) for continuation of concreting for better bond is deemed to have been built in the items.
 - j) All incidental charges for cartage, storage and safe custody of materials brought to site.
15. Contractor shall ensure storage of sufficient quantity of mining materials (stone chip, Sand, Brick etc.) before the ban imposed by NGT / State govt. during monsoon season as per their requirement.
 16. The agency has to fill the gap with silicon sealant in between the plaster surface and aluminium / MS steel /uPVC windows / Door frame without any extra cost.
 17. Agency has to make suitable approach for carrying the material / labour etc. required for construction without any additional cost.

NOTE :

1. No extra payment will be made to the Contractor for the operation of the above activity as mentioned at SI. No. 1 to 17.

Maintenance of Material at Site (MAS) Register –

1. All the MAS Registers including Cement and Steel Registers shall be maintained by Contractor which shall be issued to the contractor by Engineer-in-Charge in the same manner as being issued to CPWD field staff. Authenticated copies of bills / Invoice of materials which has to be entered in the MAS register are to be submitted by the contractor to CPWD before making payments.
2. Cement Register shall be reviewed by EE at least once in a month.
3. It will be deemed that work so measured, checked and paid is of the required quality and standard, both in respect of ingredients as well as the intended functions it is supposed to perform. In other words, the work would not only meet the required specifications but also the workmanship as per sound engineering practices.
4. The PM/CE shall also have to check and sign these reports at suitable intervals in token of his ensuring compliance of the 'Quality Assurance Plan' for the work.
5. Copies of bills / Invoice : Agency will provide authenticated copies of itemize bills of materials which has to be entered in the MAS Register viz steel, cement, bitumen, paint, water proofing or any other item suggested by the Engineer-in-Charge.

ADDITIONAL SPECIFICATION

1. The work shall be executed and measured as per metric dimensions given in the Schedule of quantities, drawings etc. (F.P.S. units wherever indicated are for guidance only).
2. The following modifications to the above specifications and some additional specifications shall however apply:
 - a. All stone aggregates shall be of hard stone variety to be obtained from approved quarries or from any other quarries where the material meeting to required quality and specification is available after approval from the Engineer-in-charge.
 - b. Sand to be used for cement concrete work, mortar for masonry and plaster work shall be of standard quality. Sand shall be obtained from approved location or from any other place where the material meeting to required quality and specification is available after approval from the Engineer-in-charge.
 - c. Brick of class designation 7.5 shall be obtained from any kiln where the material meeting to required quality and specification is available after approval from the Engineer-in-charge.
 - d. Fly ash bricks of required designation and strength shall be used in the work. Bricks shall be obtained from approved manufacturer only. The material should meet to required specifications.
3. Wherever any reference to any Indian Standard Specification occurs in the documents relating to this contract, the same shall be inclusive of all amendments issued thereto or revisions thereof, if any, up to the last date of submission of bid.
4. Unless otherwise specified in the schedule of quantities the rates for all items of the work shall be considered as inclusive of pumping out or bailing out water if required for which no extra payment will be made. This will include water encountered from any source, such as rains, floods, and sub-soil water table being high due to any other cause whatsoever.

5. FREQUENCY OF TEST:

The minimum frequency of sampling of concrete of each grade shall be one sample for every 50 cum or part thereof. At least one sample shall be taken from each shift. 90% of the total tests shall be done at the laboratory established at site by the contractor and remaining 10% in any laboratory mentioned in Para 3.9 above.

6. STANDARD OF ACCEPTANCE:

- 6.1 Acceptance criteria of design mix shall be in accordance with Para 5.8.3 of CPWD Specification 2019 Volume I.
- 6.2 For cast-in-situ (if required), the contractor has to arrange at site centering and shuttering as given in Proforma of Schedule before one month from stipulated date of start of work. 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 as per site requirement may be used on specific request from contractor as approved by the Engineer-in-Charge. No extra payment shall be made on any of these grounds
- 6.3 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.

6.4 As per general engineering practice, level of floors in toilet / bath, balconies, corridors shall be kept 12mm to 20mm lower than corridor/ adjacent rooms/ general floors and shuttering should be adjusted accordingly and slabs should be laid with slope towards the drainage point. Nothing extra is payable on this account.

7. FORM WORK

- 7.1 The work shall be done in general as per CPWD Specifications.
- 7.2 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, shutter-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. 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 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.
- 7.3 For the execution of centering and shuttering, the contractor shall use propriety "Reebol" chemical mould release agent of FOSROC or equivalent as shuttering oil as approved by Engineer-in-charge and nothing extra shall be paid on this account.
- 7.4 Double steel scaffolding having two sets of vertical supports shall be provided for external wall finish, cladding etc. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding platform shall be fixed. Scaffolding shall have steel staircase for inspection of works at upper levels.
- 7.5 Nothing extra shall be paid for the centering and shuttering, circular in shape whenever the form work is having a mean radius exceeding 6m in plan.
- 7.6 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.
- 7.7 As per general engineering practice, level of floors in toilet / bath, balconies, shall be kept 12 to 20mm lower than general floors as required. Shuttering should be adjusted accordingly. Nothing extra is payable on this account.
- 7.8 Concreting of upper floor shall not be done until concrete of lower floor has set at least for 14 days but form work and reinforcement can be taken up after the concrete has set at least for three days.

8. STAINLESS STEEL CRAMPS

The size & shape of the cramps shall be as per drawing and as per directions of Engineer-in-charge. The samples of steel cramps should be got approved in advance before starting the stone cladding work.

9. FLOORING

The rate of items of flooring is inclusive of Providing Sunken Flooring in Bathrooms, Kitchen, W.C., etc. and nothing extra on this account is admissible.

10. WOOD WORK

The samples of species of timber/PVC to be used shall be deposited by the contractor with the Executive Engineer before commencement of the work. The contractor shall produce cash vouchers and certificates from standard kiln seasoning plant operator about the timber section to be used on the work having been kiln seasoned by them, failing which it would not be so accepted as kiln seasoned.

- 10.1 Factory made shutters, as specified shall be obtained from factories to be approved by the Engineer-in-charge and shall conform to IS: 2202 (Part-I) 1991. The contractor shall inform well in advance to the Engineer-in-charge the names and address of the factory where from the contractor intends to get the shutters manufactured. The contractor will place order for manufacture of shutters only after written approval of the Engineer-in-charge in this regard is given. The contractor is bound to abide by the decision of the Engineer-in-charge and recommend a name of another factory from the approved list in case the factory already proposed by the contractor is not found competent to manufacture quality shutters. Shutters will, however, be accepted only if this meets the specified tests. The contractor will also arrange stage-wise inspection of the shutters at factory of the Engineer-in-charge or his authorized representative. Contractor will have no claim if the shutters brought at site are rejected by Engineer-in-charge in part or full lot due to bad workmanship/quality. Such shutters will not be measured and paid and the contractor shall remove the same from the site of work within 7 days after the written instructions in this regard are issued by Engineer-in-charge or his authorized representative.

11. STEEL WORK

All welded steel work shall be tested for quality of weld as laid down in IS: 822-1970 before actual erection.

12. INTERNAL WATER SUPPLY AND SANITARY INSTALLATIONS

- 12.1 Centrifugally cast (spun) iron S & S pipes and G.I. pipes wherever necessary shall be fixed to R.C.C. columns, beams etc. with rawl plugs and nothing extra shall be paid for this.

- 12.2 The contractor shall be responsible of the protection of the sanitary and water supply fittings and other fittings and fixtures against pilferage and breakage during the period of installation and thereafter until the building is handed over.

13. VARIATION IN CONSUMPTION OF MATERIALS

The variation in consumption of material shall be governed as per CPWD specifications and clauses of the contract to the extent applicable.

14. CONDITIONS

- 14.1 The contractor will have to work according to the programme work, decided by the Engineer-in-Charge. The contractor shall also construct a sample unit complete in all respects within time specified by the Engineer-in-Charge and this sample unit shall be got approved from the Engineer-in-Charge before mass construction is taken up. No extra claim whatsoever beyond the payments due at agreement rates will be entertained from the contractor on this account. The contractor shall take instructions from the Engineer-in-Charge for stacking of materials in any place.
- 14.2 No excavated earth or building materials shall be stacked on areas where other buildings, roads, services of compound wall are to be constructed.
- 14.3 If as per Municipal rules the huts for labour are not to be erected at the site of work by the contractors, the contractors are required to provide such accommodation as is acceptable to local bodies and nothing extra shall be paid on this account.
- 14.4 Grey cement bags shall be stacked/stored in separate godown to be constructed by contractor at his own cost as per (which is only indicative and actual size will depend on the site requirements) at page 23 of CPWD specification 2019 Vol. I with weather leak proof roofs and walls. Each godown shall be provided with single door with two locks. The keys of one lock shall remain with CPWD Engineer-in-Charge of work and that of the other lock with the authorized agent of the contractor at the site of work so that the cement is removed from the godown according to the daily requirement with the knowledge of both the parties and proper account maintained in standard proforma.

- 14.5 The contractor is responsible for the safe custody of the materials issued to him even if the materials are under double lock system.
- 14.6 The contractor shall construct suitable godowns, yard at the site of work for storing all other materials so as to be safe against damage by sun, rain, damages, fire, theft etc. at his own cost and also employ necessary watch and ward establishment for the purpose at his cost.
- 14.7 The standard sectional weights referred to as standard tables in Para 5.3.4 in specifications for works, 2019 Vol. I & II vide page 135 of Table-5.4 to be considered for conversion of length of various size of M.S. bars/cold twisted bars and Thermo Mechanically Treated Bars into weight are as under: [Note: These are as per clause 6.2 of IS:1786].

TABLE

Nominal Size	Weight KG/M	Size (Diameter MM)	Weight KG/M
6	0.222	25	3.85
8	0.395	28	4.83
10	0.617	32	6.31
12	0.888	36	7.99
16	1.58	40	9.86
20	2.47		

- 14.8 All materials obtained from contractor shall be got checked by the Junior Engineer-in-Charge of the works on receipt of the same at site before use.
- 14.9 Royalty at the prevalent rates shall have to be paid by the contractor on all the boulders, metals, shingle sand and bajri etc. collected by him for the execution of the work, direct to the Revenue authority or authorized agent of the State Government concerned or Central Government. In event of non submission of royalty challan with bills the necessary deduction shall be made as per guideline issued from State Government.
- 14.10 For all kind of R.C.C. work PPC (Portland Pazzolana Cement) shall be allowed to be used.

15 TESTING OF MATERIAL

- 15.1 Grey cement & Thermo-mechanically Treated Bar shall be arranged by the Contractor.
- 15.2 The Contractor shall produce all the materials in advance so that there is sufficient time for testing and approving of the material and clearance of the same before use in work.

16. INTEGRAL WATER PROOFING TREATMENT

The contractor must associate himself with the specialized firm to be approved by the Engineer-in-Charge in writing, for integral cement based water proofing treatment for sunken floors and on roofs. A five (05) years Guarantee Bond in prescribed Performa as specified in this document must be given by the specialized firm on stamp paper which shall be countersigned by the contractor, in token of his overall responsibility. **In addition 10% (ten percent) of the cost of these items would be retained as Guarantee Bond to watch the performance of the work done.** If any defect is noticed during the Guarantee period for five (05) years to be reckoned from the date after the maintenance period prescribed in the contract expires it should be rectified by the contractor within seven days and if not attended to, the same will be got done by another agency at the risk and cost of the contractor. However, this security deposit can be released in full, if bank guarantee of equivalent amount for five (05) years is produced and deposited with the department.

SPECIAL CONDITIONS OF CONTRACT

1. Scope of Work

- a) The work comprises construction of Underground (UG) Sump and Pump Room including RCC work, waterproofing, finishing, water supply connection, masonry, GRC Jafri, and associated civil and electrical works.
- b) The work shall be executed as per CPWD specifications, relevant IS codes, approved drawings, and directions of the Engineer-in-Charge (EIC).

2. Site Conditions & Working Restrictions

- a) The site is located within a sensitive/heritage premises; utmost care shall be taken to prevent any damage to existing structures and services.
- b) The contractor shall work under restricted conditions and coordinate with authorities to avoid disruption of normal functioning.
- c) No extra payment shall be made on account of restricted working space, limited access, or working hours.

3. RCC Work for UG Sump & Pump Room

- a) RCC work shall conform to latest IS codes and approved structural designs.
- b) **Nominal mix concrete (1:1.5:3)** shall be used, and mandatory cube testing shall be carried out.
- c) The contractor shall make adequate dewatering arrangements during excavation and concreting at no extra cost.

4. Waterproofing of Underground Structures

- a) Waterproofing treatment shall be carried out using approved integral and membrane systems ensuring complete water tightness.
- b) The contractor shall provide a 10-year guarantee against leakage/seepage on a non-judicial stamp paper. Any leakage observed during the guarantee period shall be rectified by the contractor at his own cost.

5. Flooring & Cladding Works

- a) Flooring and wall cladding shall be executed using approved materials and shall conform to specifications.
- b) Anti-skid flooring shall be provided where required.
- c) The finish shall match existing surroundings wherever applicable.

6. Disposal of Malba/Debris

- a) The contractor shall regularly remove and dispose of malba, dismantled materials, and waste to approved municipal dumping grounds.
- b) The site shall be kept clean and free from debris at all times.
- c) Nothing extra shall be payable on this account.

7. Water Supply Pipeline Connection

- a) The contractor shall provide and fix water supply pipelines connecting the UG sump to the overhead tank, including all fittings, valves, and accessories.
- b) The system shall be tested for leakage and proper functioning before commissioning.

8. Brick Masonry Work (Pump Room Mumty)

- a) Brick masonry shall be carried out using approved quality materials as per CPWD specifications.
- b) Proper curing, alignment, and finishing shall be ensured.

9. GRC Jafri & External Services

- a) GRC Jafri shall be installed as per approved design and architectural requirements.
- b) All external services including drainage, conduits, and piping shall be properly integrated and tested.

10. Safety Measures & Statutory Compliance

- a) The contractor shall follow all safety norms including use of PPE, barricading, warning signage, and safe working practices.
- b) Compliance with labour laws, fire safety regulations, and local municipal rules is mandatory.
- c) Any accident or damage shall be the sole responsibility of the contractor.

11. Coordination with Other Agencies

- a) The contractor shall coordinate with fire fighting, electrical, and other executing agencies.
- b) Any damage caused to existing works/services shall be made good at contractor's cost.

12. Quality Control & Testing

- a) All materials shall be got approved from the EIC before use.
- b) Necessary tests (RCC, waterproofing, pipelines, etc.) shall be carried out and records maintained.
- c) Work not conforming to specifications shall be rejected.

13. Completion & Defect Liability Period

- a) The work shall be completed within the stipulated time period.
- b) Defect Liability Period (DLP) shall be as per contract conditions.
- c) All defects noticed during DLP shall be rectified by the contractor at no extra cost.

14. Measurement & Payment

- a) Measurements shall be recorded as per CPWD norms and specifications.
- b) Payment shall be made based on actual executed quantities at accepted rates.

15. No Extra Claims

- a) No claim shall be entertained due to site constraints, restricted access, dewatering, coordination issues, or any other incidental factors.
- b) Rates quoted shall be deemed to include all such factors

16. Compensation / Penalty Clauses

(a) Delay in Completion

- i. If the contractor fails to complete the work within the stipulated time, **compensation for delay** shall be levied as per CPWD norms.
- ii. The compensation shall be **1.5% of the tendered value per month of delay (or part thereof)**, subject to a maximum of **10% of the tendered value**.
- iii. The decision of the Engineer-in-Charge (EIC) regarding delay and levy of compensation shall be final and binding.

(b) Non-Compliance of Quality Standards

- i. In case the executed work is found to be substandard or not conforming to specifications, the same shall be rejected.
- ii. The contractor shall rectify/re-execute the work at his own cost within the time specified by the EIC.
- iii. Failure to comply shall attract a penalty up to **5% of the cost of defective work**, in addition to rectification at contractor's risk and cost.

(c) Delay in Rectification during Defect Liability Period (DLP)

- i. Any defect pointed out during DLP shall be rectified within **7 days** (or as directed by EIC).
- ii. In case of failure, a penalty of **₹1,000 per day per defect** may be imposed, and the work may be got executed at the contractor's risk and cost.

(d) Failure in Waterproofing Performance

- i. In case of leakage/seepage observed within the guarantee period, the contractor shall rectify the same immediately at his own cost.
- ii. Failure to attend within specified time shall attract a penalty of **₹2,000 per day** till rectification, along with recovery of repair cost.

(e) Safety Violations

- i. Non-compliance with safety norms (PPE, barricading, signage, etc.) shall attract a penalty of **₹2,000 per instance**.
- ii. Repeated violations may lead to suspension of work or termination of contract as decided by EIC.

(f) Non-Removal of Malba / Site Cleanliness

- i. If debris/malba is not removed regularly, a penalty of **₹1,000 per day** shall be imposed.
- ii. The department may arrange removal at contractor's risk and cost.

(g) Damage to Existing Structure / Services

- i. Any damage caused to existing structures, utilities, or services shall be made good by the contractor at his own cost.
- ii. Additionally, a penalty up to **5% of the estimated cost of damaged** work may be imposed.

(h) Non-Deployment of Required Resources

- i. Failure to deploy adequate manpower, machinery, or materials as per schedule shall attract a penalty of **₹2,000** per day of default.
- ii. Continuous failure may lead to rescinding of contract as per CPWD provisions.

(i) Hindrance to Other Agencies

- i. If the contractor hampers progress of other agencies due to lack of coordination, a penalty of **₹2,000 per instance/day** may be imposed.

(j) Recovery of Penalties

- i. All penalties/compensations shall be recovered from the contractor's running bills or security deposit.
- ii. Imposition of penalties shall not relieve the contractor from contractual obligations.

MATERIALS ARRANGED BY THE CONTRACTOR

A. CONDITIONS FOR CEMENT

1. In all contracts where departmental issue of cement and steel is not stipulated, special conditions shall be incorporated as below:

1.1 Conditions for Cement (Grey Cement).

- i) The contractor shall procure 43 grade ordinary Portland cement conforming to IS 8112/Portland Pozzolana Cement (PPC) [conforming to IS:1489 (Part-I)], as required in the work, from reputed manufacturers of grey cement as mentioned in approved list of materials or from any other reputed cement Manufacturer having a production capacity not less than one million tons per annum as approved by **Chief Engineer/Chief Project Manager for that zone**. Supply of cement shall be taken in 50 Kg. bags bearing manufacturer's name and ISI marking. 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. In case the 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.
- ii) Use of Portland pozzolana/ordinary Portland/ Portland slag cement, admixtures in recommended proportions as per IS : 9103 shall be used in RCC structures in accordance with the circular issued by the Directorate General of Works vide No. **egk-fu-@fn-n-vuq@20 fnukad** % 16-02-2021- The use of cement shall be regulated as per the following conditions stipulated in the circular dt. 09.04.2009:-
 - a) IS:456-2000 Code of Practice for Plain and Reinforced Concrete (as amended up to date) shall be followed in regard to Concrete Mix Portion and its production as under:
 - (i) **Nominal Mix Concrete (1:1.5:3)** shall be manufactured in accordance with clause 10 of above mentioned IS:456 covering quality assurance measures both technical and organizational, which shall also necessarily require a qualified Concrete Technologist to be available during manufacture of concrete for certification of quality of concrete.
 - b) Minimum M25 grade of concrete shall be used in all structural elements made with RCC both in load bearing and framed structure.
 - c) The mechanical properties such as modulus of elasticity, tensile strength, creep and shrinkage of fly ash mixed concrete or concrete using fly ash blended cements (PPCs) are not likely to be significantly different and their values are to be taken same as those used for concrete made with OPC.
 - d) To control higher rate of carbonation in early ages of concrete both in fly ash admixed as well as PPC based concrete, water/binder ratio shall be kept as low as possible, which shall be closely monitored during concrete manufacture. If necessitated due to low water/binder ratio, required workability shall be achieved by use of chloride free chemical admixtures conforming to IS:9103. The compatibility of chemical admixtures and super plasticizers with each set OPC, fly ash and /or PPC received from different sources shall be ensured by trials.
 - e) In environment subjected to aggressive chloride or sulphate attack in particular, use of fly ash admixed or PPC based concrete is recommended. In case, where structural concrete is exposed to excessive magnesium sulphate, fly ash substitution/content shall be limited to 18% by weight. Special type of cement with low C3A content may also be alternatively used. Durability criteria like

- minimum binder content and maximum water/binder ratio also need to be given due consideration in such environment.
- f) Wet curing period shall be enhanced to a minimum of 10 days or its equivalent. In hot & arid regions, the minimum curing period shall be 14 days or its equivalent.
 - g) Subject to General Guidelines detailed out as above, PPC manufactured conforming to IS:1489 (Part-I) shall be treated at par with OPC for manufacture of Design Mix Concrete for structural use in RCC.
 - h) Till the time, BIS makes it mandatory to print the %age of fly ash on each bag of cement, the certificate from the PPC manufacturer indicating the same shall be insisted upon before allowing use of such cements in works.
 - i) While using PPC for structural concrete work, no further admixing of fly ash shall be permitted.
- III. The cement shall be brought at site in bulk supply of approximately 50 tonnes or as decided by the Engineer- In- Charge. The cement godown of the capacity to store a minimum of 2000 bags of cement or as decided by NIT approving authority in case less than 100 MT cement is required for the work, shall be constructed by the contractor at site of work for which no extra payment shall be made. For small maintenance works, NIT approving authority shall decide the requirement of the storage/godown.
- IV. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-Charge at any time.
- V. 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 of cement shall be borne by the contractor.
- VI. The actual issue and consumption of cement on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of cement shall be worked out as per procedure prescribed in clause 42 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 be made.
- VII. The cement brought to the site and the cement remaining unused after completion of the work shall not be removed from site without the written permission of the Engineer-in-charge.
- VIII. 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.
- IX. Chief Engineers/CPMs/ADGs/SDGs 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.

LIST OF APPROVED MAKE OF MATERIALS (Civil Work)

Specification/brands names of materials (Refer materials, whichever are applicable for the scope of work) and finishes approved by the **NIT approving authority** are listed below. However approved equivalent material and finishes of any other specialized firms may be used, in case it is established that the brands specified below are not available in the market but only after approval of the alternate brand by the **NIT approving authority**. (See also condition of contract):-

Sl. No.	Materials	Approved make
1	POLY-SULPHIDE SEALENT	DR. FIXIT, FOSROC, BASF, DOW CORNING, TUFFSEAL, CHOKSEY, CICO, SIKA.
2	DAMP PROOF MATERIAL	DR. FIXIT, FOSROC, BASF, IMPERMO, CICO, SIKA, BERGER.
3	STEEL	
(a)	STRUCTURAL STEEL SECTIONS	TATA, SAIL, RINL, JINDAL STEEL & POWER LTD., JSW STEEL LTD, APL APPOLO, TCI Tube Ltd.
(b)	REINFORCEMENT BAR	TATA, SAIL, RINL, JSW, JSPL.
(c)	MS STEEL GRILL/ WINDOW/ DOOR FRAME/ TRUSS FABRICATOR	STEELCO - RANCHI, MULTIWYN INDS CORPORATION – KOLKATA, WINDOORS – RANCHI, PERFECT STEEL FABRICATION – NEW DELHI.
4	CEMENT (PPC)	ULTRATECH, ACC, JAYPEE, NUVOCO, GRASIM, AMBUJA.
5	ADMIXTURE	FOSROC, SIKKA, DR. FIXIT, BASF, CICO, BERGER.
6	WHITE CEMENT	J.K. WHITE, BIRLA WHITE.
7	WATER PROOFING COMPOUND	DR. FIXIT, FOSROC, SIKA, TAPECRETE, CICO, ACCOPROOF.
8	BITUMEN	INDIAN OIL, HINDUSTAN PETROLEUM, BHARAT PETROLEUM.
9	INJECTION GROUTING	DR. FIXIT, FOSROC, BASF, CICO.
10	LOCKS/LATCH, MORTISE LOCK	GODREJ, HARRISON, DOORSET, LINK, HETTICK.
11	LAMINATES	GREEN, CENTURY, MERINO, ROYAL TOUCH, STYLAM
12	SS WIRE MESH	STERLING ENTERPRISES, TRIMURTY WELDED, SPC (SELECTED PRODUCT Co.)
13	PRELAMINATED PARTICLE BOARD	NOVOPAN, KITLAM, ARCHID PLY, ACTION TERSA
14	ADHESIVE	PIDILITE, DUNLOP, VAMORGANIC, FOSROC, SIKA, CICO, BASF.
15	EPOXY MORTAR	FOSROC, SIKA, DR. FIXIT, CICO.
16	DASH FASTENER	HILTI, FISHER, BOSCH, CANON.
17	FLUSH DOOR SHUTTERS (DECORATIVE/NON DECORATIVE).	CENTURY, GREENPLY, GREEN PANEL.
18	BOARD & PLYWOOD	CENTURY, GREENPLY, GREEN PANEL
19	HYDRAULIC DOOR CLOSER/ FLOOR	HARDWYN, GODREJ, DORMA, HEFFLE, KICH, HETTICK.
20	WOODEN DOOR FITTINGS OF BRUSHED STEEL	GODREJ, DORMA, HEFFLE, KICH, HETTICK.

Sl. No.	Materials	Approved make
21	FIRE CHECK DOOR/ FIRE PROOF DOOR (Glass)	NAVAIR, SAINT GOBAIN, SHAKTI HORMANN
	FIRE CHECK DOOR/ FIRE PROOF DOOR/ FIRE SHAFT DOOR (Metal)	NAVAIR, SAINT GOBIN, TATA PRAVESH, SHAKTI HORMANN
22	FIRE CHECK ACCESSORIES CALCIUM/ SMOKE SEAL STRIP/ DOOR CLOSER LOCK	DOORSET, DORMA, GEZE, GODREJ, HAFFLE.
23	PREMIUM ACRYLIC INTERIOR PAINT WITH LOW VOC	ASIAN (ROYALE SHYNE), BERGER (LUXOL SILK GLAMOUR), NEROLAC (IMPRESSION 24 CARAT), DULUX (VT PEARL GLOW)
24	CEMENT PRIMER WITH LOW VOC	ASIAN, BERGER, NEROLAC, ICI-DULUX
25	ANODISED ALUMINIUM HARDWARE (HEAVY DUTY)	HARDIMA, EVERITE, SIGMA (ISI MARKED), CLASSIC.
26	HARDWARE FITTINGS	GODREJ, HAFFLE, HETTICH, KICH, DORMA, PRAYAG, POLYTUF (R.S. INDUSTRIES)
27	TOUGHENED GLASS	MODI GUARD, SAINT GOBAIN, ASAHI
28	ALUMINIUM SECTIONS	HINDALCO, INDALCO, JINDAL.
29	FRICTION STAY HINGES	EARL-BIHARI, HETTICH, DORMA, HEFFLE.
30	NUTS, BOLTS, DASH FASTNER AND S. S. SCREWS	HILTI, SUNDRAM FASTNER, TVS, OMNI, EXCEL
31	EPDM GASKET	HANU, ANAND, NEOPRENE
32	STRUCTURAL SILICON, WEATHER SILICON	DOW CORNING, WACKER, 3M, PIDILITE, ALSTONE, LOHMANN
33	ADHESIVE TAPE	NORTON, 3M, GYPROC.
34	GLAZED CERAMIC TILES	KAJARIYA, JOHNSON, SOMANY, NITCO.
35	CEMENT CONCRETE TILES/HARDONTE TILES	NITCO, HINDUSTAN, PODDAR, ULTRA TILES, NTC.
36	VITRIFIED TILES	KAJARIYA, JOHNSON, SOMANY, NITCO.
37	TILE ADHESIVE	CICO, PIDILITE, FOSROCK, BAL ENDURA, LETECRETE.
38	CHEQUERED TERRAZO TILES	NITCO, BHARAT, PODDAR, ULTRA TILES, SOMANY, HINDUSTAN.
39	CLAY TILES ON ROOF	KENJAI, JOHNSON, UNISOFT.
40	CC PAVERS	ULTRA TILES, HINDUSTAN, SATI.
41	GRASS PAVER	UNISTONE, ULTRA, HINDUSTAN, SATI.
42	WATER-PROOF CEMENT PAINT	SNOWCEM, ASIAN, BERGER, NEROLAC.
43	SYNTHETIC ENAMEL PAINT	BERGER (LUXOL), ASIAN (APCOLITE), ICI-DULUX (PROMISE)
44	PREMIUM ACRYLIC EXTERIOR EMULSION PAINT	ASIAN (APEX ADVANCE), BERGER (WEATHER COAT SMOOTH), NEROLAC (EXCEL MICA MARBLE) ICI-DULUX (WEATHER SHIELD).
45	VITREOUS CHINA SANITARYWARE	CERA, KOHLAR, JAQUAR, HINDWARE, PARRYWARE.
46	FIRECLAY SINK & DRAIN BOARDS	CERA, KOHLAR, JAQUAR.
47	STAINLESS STEEL SINKS	NIRALI, NILKANTH, SPC, M/s PRAYAG POLYMERS (P), Ltd.,

Sl. No.	Materials	Approved make
48	C.P. BRASS FITTINGS	JAQUAR, KOHLAR, ROCA, HINDWARE.
49	SOIL, WASTE & VENT PIPES & FITTINGS (A) CENTRIFUGALLY CAST IRON	NECO, RIF, BIC, HEPCO, SKF, RPMF
50	LA (CI) PIPES	NECO, RIF, BIC, HEPCO, SKF, RPMF
51	G.I.PIPES	TATA, JINDAL (HISSAR)
52	G.I.FITTINGS (MALLEABLE CAST IRON)	UNIK, ZOLOTO.
53	GUNMETAL VALVES	LEADER, SANT, ZOLOTO.
54	STONEWARE PIPE & GULLY TRAPS	PERFECT, PARRY.
55	R.C.C. PIPES- (NP-2/NP-3)	LAKSHMI, SOOD & SOOD, JAIN & CO, HINDUSTAN.
56	MS PIPES	TATA, SAIL, JINDAL, APL APOLLO.
57	C.I. DOUBLE FLANGED SLUICE VALVES	KIRLOSKAR, IVC, BURN.
58	C.I. DOUBLE FLANGED NON-RETURN VALVES	KIRLOSKAR, LEADER
59	C.I. MANHOLES COVERS	BIC, RIF, HEPCO, SPC (SELECTED PRODUCTS Co.
60	uPVC/CPVC PIPE	SUPREME, PRINCE, FINOLEX, ASTRAL, ASHIRWAD, HINDWARE (TRUFLO).
61	BALL VALVES	ZOLOTO, SANT, LEADER.
62	SPIDER FITTINGS	DORMA, HEFFLE, KICH, HETTICK, GODREJ
63	MINERAL FIBRE FALSE CEILING	ANUTONE, USG KNAUF, SAINT GOBAIN.
64	LIGHT WEIGHT CALCIUM SILICATE FALSE CEILING	AEROLITE, HILUX, ANUTONE.
65	ALUMINIUM COMPOSITE PANEL	ALUCOBOND, ALUDECOR, REYNOBOND, ALSTONE, ALUTUFF
66	COLOURED REFLECTIVE GLASS	SAINT GOBAIN, ASAHI, MODI GUARD
67	GLASS REINFORCED CONCRETE TILE	UNISTONE, ULTRA, GYPROC
68	uPVC WINDOW SECTION	FENESTA, REHAU, KOMMERLING, ENCRAFT, DIMEX, VEKA, PLASTONE.
69	POLYCARBONATE SHEET	GE PLASTICS INDIA LTD., LEXAN, PALRAM.
70	STAINLESS STEEL 304 GRADE HARDWARE FITTINGS	KICH, INNOTECH, HAFFLE, HETTICH, DOORSET, GODREJ, AKS.
71	STAINLESS STEEL 202 GRADE HARDWARE FITTINGS	DOORSET, GODREJ, CRUST, RAJBADRI, AKS, INNOTECH.
72	HUBLESS CENTRIFUGALLY PIPES & FITTINGS	NECO, RIF, BIC, HEPCO, SKF, RPMF
73	SOLID PVC CUP BOARD, SOLID KITCHEN CABINET & SOLID PVC DOOR	RAJ SHREE, ALSTONE.
74	PVC DOORS & FRAMES	POLY LINE, (POLY LINE EXTRUSION PVT. LTD) RAJSHRI (RAJSHRI PLASTIWOOD).
75	PTMT BATHROOM FITTINGS	M/S PRAYAG POLYMERS PVT. LTD., POLYTUF (R.S INDUSTRIES), KINGSTON (PLASTOCRAFT SANITARY INDIA PVT. LTD)
76	WPC BOARD, FRAMED AND DOOR SHUTTER	ALSTONE, RAJSHREE, CENTUARY, GREEN.
77	PVC WATER TANK	ROTOSTORE, SINTEX, SUPREME, ASTRAL, PRINCE.

Sl. No.	Materials	Approved make
78	CEMENT PARTICAL BOARD	BISON PANEL, SHERA, CENTURY
79	RMC – PLANTS	LAFARGE (NUVOCO), ULTRATECH, ACC, FIRST CHOICE, RMC INDIA or As approved by NIT approving authority.
80	GYPSON BOARD FALSE CEILLING	USG KNAUF, GYPROCK, SAINT GOBAIN.
81	METAL FALSE CEILLING	USG KNAUF, HUNTERDOUGLAS, ARMSTRONG.
82	ANTI TERMITE TREATMENT	INTEGRATED MULTI SERVICES & SOLUTIONS PVT. LTD. (IMSS), RENTOKILL PEST CONTROL INDIA PVT. LTD. (PCI),ISS HIGH CARE PVT. LTD.
83	FRP UNDER GROUND STP (MBBR)	ENVISOL / SINTEX
84	ZINC COMPOSITE PANEL	ALPOLIC, VM ZINC, ALUDECOR, ALSTONE
85	MS PIPES (SQUARE/ROUND)	TATA, SAIL, JINDAL, APL APOLLO.
86	EXPANSION JOINT SYSTEM (ASTM 6063)	SCON, KANTAFLEX, SUNFIELD, Z-TECH, MNR ENGINEERING PRODUCTS.
87	AAC BLOCK	ACC, ULTRATECH, TISCO BUILD, EXCEL, FLEXI BUILD.
88	ADHESIVE FOR AAC BLOCK	PIDILITE, FOSROC, SIKA, CICO, ACC, ULTRATECH.
89	SMC Panel Tank	SOVISY, Devi Polymers or Equivalent
90		

Preference to PPP-M – II Policy (Make in India):

- (i) The Government has issued public procurement policy (Preference to Make in India) vide Ministry of Commerce and Industry Development of industrial policy and promotion (PPS) vide order No. P-45021/2/2017-PP BE-II dated 28.05.2018, to —Encourage Make in India and to promote manufacturing and production of Goods and services in India with a view to enhancing income and employment. CPWD has decided to implement this policy.
- (ii) The agency shall submit list of makes of materials proposed to be used on the work from local suppliers (as defined in the above order dated 28.05.2018) along with minimum local content as specified below for approval of the department out of the approved makes kept in the tender.
- (iii) The department will be approving only makes of the materials having a minimum local content of 50% for use on this work, out of the preferred makes list.
- (iv) The minimum local content of 50% is considered for the complete item including labour component. The agency shall obtain the certificate for all items except for sundry items.

Abstract of Estimated Cost

Name of work: Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire fighting services & Civil Works).

Description	Estimated amount (Rs.)	Rate to be quoted by agency in percentage above/below/at par with respect to estimated cost	Amount Quoted by agency (In Rs.)
Schedule of quantity (Electrical work)	51,25,474/-		
Schedule of quantity (Civil work)	12,79,465/-		
Total Estimated Cost	64,04,939/-		

Schedule of Quantity (Electrical Component)

Name of work: Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting services).

Item No.	Description Of Item	Qty.	Unit	Rate	Amount	Remark
1	Supplying, Installation, Testing and Commissioning of Electric driven Main Fire Pump suitable for automatic operation and consisting of following, complete in all respects, as required.					27.1.9
(a)	Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal conforming to IS 1520.					
(b)	Suitable HP Squirrel cage induction motor, TFEC, synchronous speed 1500 RPM, suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.					
(c)	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.					
(d)	Suitable cement concrete foundation duly plastered with antivibration pads.					
(i)	1620 lpm at 56 m Head	1	Set	299587.00	299587.00	
2	Supplying, Installation, Testing and Commissioning of Diesel Engine driven main fire pump suitable for automatic operation and consisting of following, complete in all respect as required. (Diesel Driven Pump)					
(a)	Horizontal type, multistage, centrifugal pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal conforming to IS 1520.					
(b)	Suitable HP, 1500 RPM water cooled with radiator, diesel engine conforming to relevant IS standard complete with auto starting mechanism, 12 / 24 volts electric starting equipment, diesel tank, exhaust pipe extended upto 10 meter outside pump house duly insulated with 50 mm thick glass wool with 1.0 mm thick aluminium sheet cladding, residential silencer, instruments and protection as per standard specification, stop solenoid for auto stop in the event of fault with audio indications, painted with post office red colour etc. as required.					
(c)	M.S. Fabricated, common base plate, coupling, coupling guard, foundation bolts etc. as required.					
(d)	Suitable cement concrete foundation duly plastered with antivibration pads.					
(i)	1620 lpm at 56 m Head	1	Set	538291.00	538291.00	27.2.9

3	Supplying, Installation, Testing and Commissioning of Electric driven Pressurisation pump suitable for automatic operation and consisting of following, complete in all respects, as required. (Jockey Pump)					
(a)	Horizontal type, multistage, centrifugal pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal conforming to IS 1520.					
(b)	Suitable HP Squirrel cage Induction motor TFEC type suitable for operation on 415 volts, 3 phase, 50 Hz AC supply with IP 55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.					
(c)	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.					
(d)	Suitable cement concrete foundation duly plastered with antivibration pads.					
(i)	180 lpm at 56 m Head	1	Set	87105.00	87105.00	27.3.3
4	Fabrication, Supply, Installation, Testing and Commissioning of Electrical control panel of cubical construction, floor mounted type, fabricated out of 2 mm thick CRCA sheet, compartmentalised with hinged lockable doors, dust and vermin proof, powder coated of approved shade after 7 tank treatment process, cable alley, interconnection with suitable size copper conductor cable / solid copper strip, having switchgears and accessories, mountings and internal wiring, earth terminals, numbering etc. complete in all respect, suitable for main fire pump, pressurisation pump & diesel pump set complete as per CPWD specification with following in coming and outgoing, suitable for operation on 415 V, 3 phase, 50 Hz. AC supply with enclosure protection class IP 42 as required.					
I	INCOMER					
(a)	250A, 50kA, 4P, MCCB, Ics = 100% Icu rating Digital Voltmeter (0 - 500 V) with selector switch Digital Ammeter (0 - 250 A) with selector switch & CTs etc.					
(b)	LED type RYB phase indicating lamps, ON, OFF, trip indicating lamps					
(e)	Set of Copper Bus Bar 300 A					
II	OUTGOING					
	(Note : All outgoing feeders for pumps should have digital Ammeter with selector switches and LED type ON, OFF, trip indicating lamps)					
(a)	Main Fire Pump					
	125 A, 50kA, TPN, MCCB, Ics = 100% Icu, with fully automatic Star/ Delta starter suitable for 60 HP pump with overload protection, current sensing type single phase preventor complete with all accessories and internal wiring required for automatic operation, selector switch for local / remote, Auto / Manual / OFF operation. - 1 Set					
(b)	Jockey Pump					

9	Supplying, Fixing, Testing & Commissioning of Butterfly valve PN 1.6 rating with bronze / gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets, confirming to IS 13095 of following sizes as required.					
(a)	150 mm dia	4	Set	9737.00	38948.00	27.11.6
b)	80 mm dia	15	Set	5406.00	81090.00	27.11.4
10	Providing, Installation, Testing & Commissioning of Non-Return Valve of following sizes conforming to IS 5312 complete with rubber gasket, GI bolts, nuts, washers etc. as required.					
(a)	150 mm dia	4	Set	18884.00	75536.00	27.14.7
11	Supplying and Fixing Single headed external yard hydrant valve with 1 No. 63 mm dia instantaneous FM Gun metal / Stainless Steel coupling and cast iron wheel, ISI marked, conforming to IS 5290 (Type - A) with black Gunmetal / Stainless Steel cap and chain as required.					
(a)	Single Headed Gunmetal	6	Set	8208.00	49248.00	27.10.1
12	Supplying and Fixing Single headed internal yard hydrant valve with instantaneous Gun metal / Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type - A) with black Gunmetal / Stainless Steel cap and chain as required.					
(a)	Single Headed Gunmetal	9	Set	8208.00	73872.00	27.9.1
13	Supplying and Fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS: 636 (Type -A) as required.					
(a)	Gun Metal	30	Set	5455.00	163650.00	27.16.1
14	Supplying & Fixing 63 mm dia Gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS: 903 suitable for instantaneous connection to interconnect hose pipe coupling as required.					
(a)	Gun Metal	15	Each	4977.00	74655.00	27.18.1
15	Supplying and fixing of hose cabinet of size 750 mm x 600 mm x 250 mm made of 16 Gauge MS sheet with 6 mm thick glazed glass doors including necessary locking arrangement suitable to accommodate 2 Nos. 15 meter long Hose pipe, 1 No. branch pipe, mounted on wall OR raised brick platform and fully painted with Post Office Red externally and white internally with synthetic enamel paint complete in all respect, for internal hydrant as required.	6	Each	6351.00	38106.00	MR
16	Providing & Fixing of Hose cabinet of size 900 mm x 600 mm x 500 mm made of 16Gauge MS sheet with 6 mm thick glazed glass doors i/c necessary locking arrangement suitable to accommodate external hydrant with butterfly valve, 2 Nos. 15 mtr. long hose pipe, 1 No. branch pipe, mounted on wall or raised brick platform and duly painted with post office red externally and while internally with synthetic enamel paint complete in all respect, for external hydrant, as required.	9	Each	12904.00	116136.00	MR

17	Supplying and Fixing of Fire Brigade Connection of cast iron body with Gun Metal male instantaneous inlet couplings complete with cap and chain as required for suitable dia MS Pipe connection conforming to IS 904 as required.					
(a)	3 way - 150 mm dia M.S. Pipe	3	Set	10097.00	30291.00	27.19.3
18	Providing and Fixing flow switch in flowing size MS pipe line including connection etc. as required.					
(a)	150 mm dia	2	Each	9644.00	19288.00	27.23.2
(b)	100 mm dia	2	Each	8069.00	16138.00	27.23.1
19	Providing, Installation, Testing and Commissioning of ISI marked CO2 Wheeled Type Fire Extinguisher of 9 kg capacity consisting of trolley with handle & wheel, wheel type release valve, locking arrangement and shut - off valve fitted with delivery hose horn, etc and conforming to IS:16018 etc. complete with up to date test certificate as required.	4	Each	17205.00	68820.00	MR
20	Supplying of one number XLPE insulated and PVC sheathed aluminium conductor armoured UG power cable of 1.1 KV grade of following size etc as required.					MR
a)	3.5 core 240 Sq.mm. (from station to main fire panel)	150	Mtr.	2291.67	343750.50	
b)	3.5 core 95 Sq.mm. (from fire panel to main hydrant pump)	20	Mtr.	976.61	19532.20	
c)	3.5 core 35 sq.mm. (from fire panel to Jockey pump)	20	Mtr.	422.20	8444.00	
21	Supplying of annealed bare copper conductor armoured PVC insulated and FRLS PVC sheathed / XLPE power cable of 1.1 KV grade confirming to IS:694 20108 of following size etc complete as required.					
a)	3 core 2.5 sq.mm.	50	Mtr.	149.50	7475.00	MR
22	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.					
a)	Above 185 sq. mm and upto 400 sq. mm (from station to main fire panel)	130	Mtr.	170.00	22100.00	10.5.4
23	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.					
a)	Upto 35 sq. mm (clamped with 1mm thick saddle)	70	Mtr.	53.00	3710.00	10.8.1
b)	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	20	Mtr.	109.00	2180.00	10.8.2
c)	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	20	Mtr.	226.00	4520.00	10.8.4
24	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray (Galvanisation thickness not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.					
(a)	150 mm width x 50 mm depth x 1.6 mm thickness	80	Mtr.	803.00	64240.00	4.6.2
25	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.					

a)	3.5 X 240 sq. mm (62mm)	2	Each	1160.00	2320.00	11.1.29
b)	3.5 X 95 sq. mm (45 mm)	4	Each	684.00	2736.00	11.1.24
c)	3.5 X 35 sq. mm (32 mm)	2	Each	437.00	874.00	11.1.21
26	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.					
a)	160 mm dia (OD-160 mm & ID-135 mm nominal)	130.00	Mtr	537.00	69810.00	15.16.4
	FIRE DETECTION AND ALARM SYSTEM (CONVENTIONAL)					
27	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS 2189 with minic diagram for all area/ zone covered, complete with all connection, interconnection as required.					
	4 Zone	1	Each	9808.00	9808.00	28.1.9.1
28	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	6	Each	513.00	3078.00	28.1.3
29	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	6	Each	600.00	3600.00	28.1.6
30	Supplying & laying of 2x1.5 sq.mm fire alarm armoured cable, 600/1000V rated with annealed copper conductor having XLPE insulation, steel wire armouring & FRLS outer sheath complete as required.	400	Mtrs	192.00	76800.00	28.5.2
	Total				5125473.70	
	Say				5125474.00	

Schedule of Quantity (Civil Component)

Name of work:- Construction of 'A' Type (two sections) school Building (G+2), 4 Nos. Type-II Qtrs. (G+1), 4 Nos. Type-III Qtrs. (G+1), 01 No. Type-V Qtr., Canteen, Electrical substation, Pump room, Underground sump, Boundary walls along with Gates & Guard room including Internal Water Supply, Sanitary Installation, Drainage, Internal road, Pathways, Internal Electrical Installation, Networking, Substation Equipment & Power Distribution and Fire Fighting System etc. complete for Kendriya Vidyalaya at Saraikela Kharsawan (Jharkhand). (SH: Providing of Fire Fighting services).

Sl. No.	Description	Qty	Unit	Rate	Amount
1	EARTH WORK				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead up to 50 m and for all lift, as directed by Engineer-in-charge.				
1.1.1	All kinds of soil	170.00	cum	177.50	30175.00
1.2	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 1.5 m, 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 :				
1.2.1	All kinds of soil				
1.2.1.1	Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia	40.00	Mtr	352.15	14086.00
1.3	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 life.	71.00	cum	196.00	13916.00
2	CEMENT CONCRETE (CAST IN SITU)				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :				
2.1.1	1:5:10 (1 cement : 5 coarse sand (zone-III) derived from natural sources : 10 graded stone aggregate 40 mm nominal size derived from natural sources)	3.55	cum	6518.60	23141.00
2.2	Centering and shuttering including strutting, propping etc. and removal of form work for:				
2.2.1	Foundations, footings, bases for columns	2.12	sqm	392.15	831.00
3	REINFORCED CEMENT CONCRETE				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level :				
3.1.1	1:1.5:3 (1 cement : 1.5 coarse sand (zone-III) derived from natural sources : 3 graded stone aggregate 20 mm nominal size derived from natural sources)	43.00	cum	9045.75	388967.00
3.4	Centering and shuttering including strutting, propping etc. and removal of form for				
3.4.1	Foundations, footings, bases of columns, etc. for mass concrete	11.00	sqm	392.15	4314.00

Sl. No.	Description	Qty	Unit	Rate	Amount
3.4.2	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	103.00	sqm	842.50	86778.00
3.4.3	Suspended floors, roofs, landings, balconies and access platform	29.00	sqm	927.25	26890.00
3.4.4	Lintels, beams, plinth beams, girders, bressumers and cantilevers	28.00	sqm	736.40	20619.00
3.4.5	Columns, Pillars, Piers, Abutments, Posts and Struts	9.00	sqm	961.30	8652.00
3.5	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level.				
3.5.1	Thermo-Mechanically Treated bars of grade Fe-500D or more.	4270.00	kg	107.85	460520.00
4	MASONRY WORK				
4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
4.1.1	Cement mortar 1:6(1 cement :6 coarse sand)	0.35	cum	7132.25	2496.00
5	WOOD AND P.V.C. WORK.				
5.1	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. including priming coat with approved steel primer all complete.				
5.1.1	Fixed to openings /wooden frames with rawl plugs screws etc.	60.00	Kg	238.35	14301.00
7	FINISHING				
7.4	6 mm cement plaster (1:3) finished with a floating coat of neat cement.	14.00	sqm	396.65	5553.00
7.7	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :				
7.7.1	Two or more coats on new work	8.00	sqm	155.90	1247.00
8	WATER SUPPLY				
8.1	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.				
8.1.1	40 mm dia nominal bore	20.00	mtr	617.05	12341.00
8.1.2	50 mm dia nominal bore	20.00	mtr	762.15	15243.00
8.1.3	65 mm dia nominal bore	10.00	mtr	896.60	8966.00
8.2	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
8.2.1	40 mm dia nominal bore	2.00	each	826.10	1652.00
8.2.2	50 mm nominal bore	2.00	each	1026.65	2053.00
8.2.3	65 mm nominal bore	1.00	each	1742.15	1742.00
8.3	Providing and fixing G.I. Union in G.I. pipe including cutting and threading the pipe and making long screws etc. complete (New work) :				
8.3.1	40 mm nominal bore	2.00	each	631.30	1263.00
8.3.2	50 mm nominal bore	2.00	each	823.80	1648.00

Sl. No.	Description	Qty	Unit	Rate	Amount
8.3.3	65 mm nominal bore	1.00	each	1136.80	1137.00
9	WATER PROOFING				
9.1	Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/sqm. This layer will be allowed to air cure for 4 hours. (b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours. The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.	76.00	Sqm	617.05	46896.00
	Total				1195427.00
	Applying multiplying correction factor @ 0.973 vide OM No. 158/SE(TAS)/GST/2024/02-E dated: 08.08.2024				1163150.00
	Add Cost Index @10%				116315.00
	Grand Total				1279465.00