Name of Work: Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

NIT No.: 10/ NIT/EE & SM (C) II/SE cum PD/ MPC-II/2026-27

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CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

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Not to be uploaded below this line.

This N.I.T. is approved for **Rs. 1,73,83,488/-**(Rupees One Crore Seventy-Three Lakh Eighty-Three Thousand Four Hundred Eighty-Eight Only)

Executive Engineer And Senior Manager (C)-II,
O/o SE CUM PD, MPC-II ,
CPWD, MUMBAI – 37.

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

GOVERNMENT OF INDIA CENTRAL

PUBLIC WORKS DEPARTMENT

NOTICE INVITING e-TENDER

The Executive Engineer and Senior Manager (C)-II , O/o SE Cum PD, Mumbai Project Circle -II , CPWD, Mumbai-37 invites on behalf of the President of India, online Percentage rate bids from approved and eligible contractors of CPWDin Building and Road category.

NIT No.: 10/ NIT/EE & SM (C) II/SE cum PD/ MPC-II/2026-27

Name of Work: Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

Estimated Cost: Rs. 1,73,83,488/- (Rs. 96,24,597- Civil + Rs.77,58,891/- Electrical)

Earnest Money: Rs. 3,47,670/-

Period of completion: 04 (Four) Months.

Last time and date of submission of bid:- 11.00 on 27/11/2026

The bid forms and other details can be obtained from the website www.etender.cpwd.gov.in The tender notice is also available on website www.cpwd.gov.in ,www.eprocure.gov.in

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

PART - A

GENERAL INFORMATION

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

CHECK LIST FOR CONTRACTORS FOR SUBMISSION OF BIDS

1. The bidder should read all the instructions, terms & conditions, contract clauses, nomenclature of items, specifications etc. contained in the tender documents very carefully, before quoting the rates. The tenderer should also read the CPWD General **Contract 2023 for Maintenance as amended / modified** (with correction slips up to last date of submission of tender) which will be part of the agreement.
2. The agency shall quote the rate for complete scope of work in both words and figures.
3. The contractor shall quote his rates keeping in mind the scope of work, time line, specifications, terms & conditions, additional conditions and special conditions etc. and nothing shall be payable extra whatsoever unless otherwise specified.
4. The contractor shall also furnish Performance Guarantee of As per O.M. No. DG/CON/Maintenance /2023/18 dated 27.02.2026 in addition to the other deposits mentioned elsewhere in the contract for proper performance of the agreement.
5. The Performance Guarantee shall be in the shape of FDR or Bank guarantee as per Performa given in Annexure enclosed.
6. In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed onhis behalf by a person holding a power of attorney authorizing him to do so. Such power of attorney should be produced with the tender and it must be disclosed that thefirm is duly registered under the Indian partnership act, 1952.
7. GST / other taxes as applicable shall be paid by the contractor himself. Amount quotedby the bidder shall be inclusive of all taxes & nothing extra shall be payable. The department shall deduct the mandatory deductions at source from the R.A bills as applicable. However, for statutory deduction of income tax & GST, necessary TDS certificate shall be given by department. The contractor shall quote his rates considering all such deductions.
8. The tender, which is not duly signed by authorized signatory or is conditional shall betreated as non-responsive and shall be summarily rejected.
9. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose EMD deposited (as per Form A) with office of any EE /AE/AAO (including NIT issuing EE/AE) CPWD, anywhere in India and other documents scanned and uploaded are found in order.

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

INFORMATION & INSTRUCTIONS FOR CONTRACTORS FOR e-TENDERING

The Executive Engineer and Senior Manager (C)-II , O/o SE cum PD, MPC-II , 1st floor, Kendriya Sadan, Sector 7, CGS Colony, S.M. Rd, Antop Hill, Mumbai-400037, (Phone No**. No. 022 – 35040655 Email id:** eesm2mpc2@yahoo.com) on behalf of the President of India invites online Percentage rate bids from approved and eligible contractors of CPWD in Building and Road category (Formerly Composite Category) for the following work: -

NIT No	10/ NIT/EE & SM (C) II/SE cum PD/ MPC-II/2026-27.
Name of Work	Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.
Location	IITB, Research Park, Powai, Mumbai.
Estimated cost put to bid	**Rs. 1,73,83,488/- (Rs. 96,24,597/- Civil + Rs.77,58,891/-Electrical)**
Earnest Money	Rs. 3,47,670/-
Period of Completion	04 (Four) Months
Last date & time of online submission of bid	Up to 11.00 Hrs. on . 27.11.2026
Time and date of opening of bid	Up to 11.30 Hrs. on . 27.11.2026

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

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

downloaded from website www.etender.cpwd.gov.in or www.cpwd.gov.in or www.eprocure.gov.in free of cost.

4. The bid can only be submitted after deposition of original EMD either in the officeof Executive Engineer inviting bids or division office of any Executive Engineer,CPWD within the period of bid submission. (The EMD document shall only be issued from the place in which the office of receiving division office is situated) and uploading the mandatory scanned documents such as **Insurance Surety Bonds, Account Payee Demand Draft or Banker's 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 EE /AE/AAO (including NIT issuing EE/AE) CPWD and other documents as specified.

   A part of earnest money (EMD) is acceptable in the form of bank guaranteealso. In such cases, 50% of earnest money or Rs. 20 Lakh whichever is less, will have to be deposited in shape prescribed above and balance can be accepted in form of Bank Guarantee issued by a Commercial bank. The bank guarantee submitted as a part of Earnest Money shall be valid for a period of six months or more from the last date of submission of bid.

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 beforehand. The necessary training materials including the videos with step-to-stepprocess 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 e-signeron 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. Bidder should ensure that the document uploaded is legible and full documents pages are properly scanned.

10. Contractor must ensure to quote his percentage rate (above/below) in the attached schedules. However, if a tenderer does not quote any percentage above / below onthe 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.

11. 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 the scan copies of all the documents stipulatedin bid

(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 orany section /subhead in percentage rate tender, the tender shall be treated asinvalid and will not be considered as lowest tenderer.

12. The tenderer must associate with himself, agencies of the appropriate eligibility to tender for each of specialized nature of items / work listed below individually. Such works shall be got executed only through associated agencies specialized in these fields. The tenderer whose tender is accepted shall indicate the name(s) of his associated specialized agencies those fulfilling the eligibility criteria laid down below after award of work and at least 30 days before commencement of such items / work for the approval of the Engineer-in-Charge of that component, whose decision shall be final and binding. If the tenderer, himself fulfills the eligibility criteria laid down below for associated specialized agencies, then the tenderer shall not require to associate with himself the associated specialized agency.

List of Documents to be scanned and uploaded within the period of tender submission:

i. Copy of receipt for deposition of original EMD to division office of any Executive Engineer (including NIT issuing EE/AE), CPWD.

ii. Insurance Surety Bonds, Account Payee Demand Draft or Banker's Cheque or Fixed Deposit Receipts or / and Bank Guarantee of any Commercial Bank against**EMD drawn in Favor of *Executive Engineer, NISM Project Division–II, CPWD, Navi Mumbai*.**

iii. Enlistment order of the contractor

iv. Certificate of registration for GST or acknowledgement of up to date filed return. "If the bidder has not obtained GST registration in the state in which the work is to be taken up, then in such a case the bidder shall upload following undertaking with the bid document "If work is awarded to me, I/we shall obtain GST registration certificate within one month from date of receipt of award letter or before payment of 1st RA Bill."

v. ERP training Certificate of the contractor or his representative.

vi. PAN Card

If the above-mentioned documents are not scanned and uploaded within the period of bid submission, the bid shall be treated as invalid and cancelled.

All modifications/addendums/corrigendum issued regarding this bidding process, shall be uploaded on website only and shall not be published in any Newspaper.

If any information furnished by the applicant is found incorrect at a later stage, he shall be liable to be debarred from tendering/taking up of works in CPWD. Thedepartment reserves the right to verify the particulars furnished by the applicant independently.

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

While submitting the revised bid, agency can revise the rate of one or more item(s)any number of times (he need not re-enter rate of all the items) in case of item rate tender and / or revise the percentage in case of percentage rate tender, within the last time and date ofsubmission of bid as notified.

Executive Engineer and Senior Manager (C)-II ,
O/o SE cum PD, MPC-II , MPC-II
CPWD, Mumbai-37.

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

CPWD-6

Government of India CPWD

Notice Inviting Tender for e-Tendering

1. The Executive Engineer and Senior Manager (C)- II, CPWD, 1st floor, Kendriya Sadan, Sector 7, CGS Colony, S.M. Rd, Antop Hill, Mumbai-400037, (Phone No**. No. 022 – 35040655 Email id:** eesm2mpc2@yahoo.com)onbehalf of the President of India invite on single bid system from approved andeligible contractors of CPWD in Building & Road category (Formerly Composite Category) for the following work: -

NIT No.: – 10/ NIT/EE & SM (C) II/SE cum PD/ MPC-II/2026-27.

Name of work: : Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

The enlistment of contractors shall 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 shall be valid on the original date of submission of bid.

Joint ventures / Consortium and special purpose vehicle are not accepted.

The work is estimated to cost **Rs. 1,73,83,488/- (Rs. 96,24,597/- Civil + Rs. 77,58,891/- Electrical)** 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 the bidders, besides indicating the percentage above/below the combined estimated cost put to bid, should also indicate the amount in word for each component separately. The eligibility of bidder will correspond to the combined estimated cost of different components put to bid.

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

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

3. The time allowed for carrying out the work will be **04 (Four) 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. **(i)** The site for the work is available in parts or stages as mentioned in milestone table.
   (ii) The drawings for the work are available. (Any leftout drawings shall be made available as per requirement of the same approved program of completion submitted by contractor after award of work**)**

5. 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 tobe complied with and other necessary documents and Standard General Conditions of Contract 2023 for Maintenance can be seen from the website www.etender.cpwd.gov.in orwww.cpwd.gov.in **or www.eprocure.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 tender 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 components) but before last time and date of submission of tender 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 (for balance amount as prescribed) from any of the Commercial Banks **(drawn in Favor of *Executive Engineer, NISM Project Division–II, CPWD, Navi Mumbai*)** shall be scanned and uploaded to the e-Tenderingwebsite 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 EE /AE/AAO (including NIT issuing EE/AE) CPWD within the period of bid submission.The EMD receiving Executive Engineer shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format (**FORM-A**) uploaded by tender inviting EE in the NIT.

   This receipt shall also be uploaded to the e-tendering website by the intending bidder up to the specified bid submission date and time.

   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 lacs, 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 six months or more after 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 immediatelyafter 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 other documents as specified in NIT shall be scanned and uploaded to the e-tendering website within the period of bid submission.

However, certified copy of all the scanned and uploaded documents as specified shall have to be submitted by the lowest bidder only within the period specified physically in the office of tender opening authority.

Online bid documents submitted by intending bidders shall be opened only of those bidders, **who's original EMD deposited with any division office of CPWD** andother documents scanned and uploaded are found in order.

The bid submitted shall be opened at 11:30 AM on . 27.11.2026

9. The bid submitted shall become invalid and e-Tender processing fee shall not be refunded if:

(i) The bidder is found in-eligible.

(ii) The bidders do not deposit original EMD with division office of anyExecutive Engineer, CPWD.

(iii) The bidders do not upload all the documents as stipulated in the bid document.

(iv) 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 tenderer in the office of tender opening authority.

(v) 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 of 5% (Five Percent) or As per O.M. No. DG/CON/Maintenance /2023/18 dated 27.02.2026)** of the bid amount with in the period and as per specified in Schedule F. This guarantee shall be in the form of **insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks** in accordance with the prescribed form. In case the contractor fails

todeposit the said performance guarantee within the period as indicated in Schedule 'F' including the extended period if any, the Earnest Money deposited by the contractor shallbe forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee. The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board and Program Chart (Time and Progress) within the period specified in Schedule F.

1. The description of the work is as follows:

Interior Furniture work , Internal flooring ,partition,false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

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 misunderstandingor otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilitiesfor workers and all other services required for executing the work unless otherwisespecifically 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 himselfaware of the scope and specifications of the work to be done and of conditions and rates atwhich 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. 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 bythe bidder shall be summarily rejected.

2. 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 thebids
3. 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 to rejection.
4. The competent authority on behalf of President of India reserves to himself the rightof accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
5. The contractor shall not be permitted to bid for works in the CPWD Region Mumbai (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 oras 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 gazette officer in the Central Public Works Department or in the Ministry of Urban Development. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.
6. No Engineer of gazette rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowedto work as a contractor for a period of one year after his retirement from Government service, without the previous 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 tender or engagement in the contractor's service.
7. The bid for the works shall remain open for acceptance for a period of **Thirty (30) days** from the last date of receipt of bid in case of single bid system.

i. If any bidder withdraws his bid or makes any modifications in the terms and conditions of the bid which are not acceptable to the department within 7 days afterlast date of submission of bid then the Government shall, without prejudice to anyother right or remedy, be at liberty to forfeit 50% of the said earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

ii. If any bidder withdraws his bid or makes any modifications in the terms and conditions of the bid which are not acceptable to the department after expiry of 7 days after last date of submission of bid then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 100% of the said earnest money absolutely irrespective of letter of acceptance for the work is issuedor not.

iii. In case of forfeiture of earnest money as prescribed in Para i) & ii) above, the bidders shall not be allowed to participate in the re-bidding process of the same work.

8. 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, particular specifications, special conditions, schedule of quantities 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.

9. For Composite bids: -

9.1 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.

9.2 The bid document will include following three components:

Part A: CPWD-6, CPWD-7 including schedule A to F for the major & Minor component of the work, Standard General Conditions of **Contract 2023 for Maintenance as amended / modified** up to last date of submission of bid.

Part B: Performa of Schedules: A to F for major component of the Civil work and minor component Electrical work.

Part C: General / specific conditions and specifications for major component of the Civil work.

Part D: General / specific conditions and specifications for Minor component of the Electrical work.

Part E: Schedule of quantities for major component of the Civil work.

Part F: Schedule of quantities for minor component of the Electrical work.

Part G: - Price bid

9.3 The bidder shall associate himself with agencies as per NIT conditions. The bidderswill either obtain valid electrical license at the time of execution of electrical work or associate contractors having valid electrical license of eligible class.

9.4 a) The eligible bidders shall quote rates for all items of major component as well asfor all items of minor components of work.

b) The eligible bidder shall quote percentage below / above / at par of major component as well as minor components of the work.

9.5 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 morecopies 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. EE of major component will operate **Part-A, Part-B, Part-C** and **Part-E** of the agreement. EE / ~~DDH~~ in charge of minor component(s) shall operate **Part-A, Part-B,** Part-**D** along with **Part-E** of the agreement.

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

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

9.8 The main contractor has to associate agency(s) for minor component (s) conformingto 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).

9.9 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 component.

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.

9.10 **A** The bidder will either obtain valid electrical license at the time of execution of electrical work or associate contractors having valid electrical license of eligible class. The associated agency should be of the appropriate class eligible to bid foreach of the minor component individually.

19.10 B 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.

19.11 Running payment for the major component shall be made by EE of major disciplineto the main contractor. Running payment for minor components shall be made by the Engineer-in-charge of the discipline of minor components directly to the main contractor.

19.12 A 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.

19.12B Final bill of whole work shall be finalized and paid by the EE of major component. Engineer in charge of minor components 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.

10. 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 and Senior Manager (C)-II, Mumbai Project Circle -II, CPWD, 1st floor, Kendriya Sadan, Sector 7, CGS Colony, S.M. Rd, Antop Hill, Mumbai-400037, (Phone No**. No. 022 – 35040655 Email id:** **eesm2mpc2@yahoo.com**) or ERF help line no. 18001803286 or e-mail Id: 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. (Asper DG/SOP/36 dated 25.03.2022)

11. The Agency shall arrange skill labours training to at least 5 workers as per CPWD guidelines.

Executive Engineer and Senior Manager

(C)-II,

Mumbai Project Circle -II
CPWD, Mumbai-37

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

FORM – 'A'

EMD RECEIPT FORMAT

Receipt of deposition of original Bank Guarantee

as EMDReceipt No……*…….

/Date……*…….

Name of Work: Interior Furniture work , Internal flooring,partition,false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

NIT No: : 10/ NIT/EE & SM (C) II/SE cum PD/ MPC-II/2026-27

Estimated Cost: **Rs. 1,73,83,488/- (Rs.96,24,597/- Civil + Rs.77,58,891/- Electrical)**

Amount of Earnest Money Deposit: Rs. 3,47,670/-

In the form of Treasury Challan or demand draft or pay order or Banker's cheque orDeposit at call Receipt or Fixed deposit Receipt Rs……..……

Vide……..… Date……

In the form of Bank Guarantee Rs…… issued by……Date .....(as per Form- B)

Last date of submission of bid: 11.00 Hrs. on . 2 7 . 1 1 . 2 0 2 6

Name of Bidder #

Total EMD Deposited #

Amount of Earnest Money Deposit #

In the form of Treasury Challan or demand draft or pay order or Banker's cheque or Deposit at call Receipt or Fixed deposit Receipt Rs……..……

Vide……..… Date……

In the form of Bank Guarantee Rs…… issued by……Date ..... (as per Form- B)

Last date of submission of bid: 11.00 Hrs. on . … … … …

Signatu

re Name and Designation of EMD

receiving officer

(EE/AE(P) /AE/AAO) along with Office stamp

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

Form – 'B'

On Non-Judicial stamp paper of Minimum Rs. 100/-

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

Form of Bank Guarantee for Earnest Money Deposit

Whereas the Executive Engineer (Name of Division) CPWD on behalf of the President ofIndia (hereinafter called "The Government") has invited bids under **NIT No.** 10/ NIT/EE & SM (C) II/SE cum PD/ MPC-II/2026-27 for the work of **:** Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

.

1. The Government has further agreed to accept irrevocable Bank Guarantee for Rs..... (Rs ..... only) valid up to..... (Date)***** as **Earnest Money Deposit** from .....(Name and address of contractor) (here in after called "the contractor") for compliance of his obligations in accordance with the termsand conditions of the said NIT.

2. We..... (Name of the bank) …… (Here in after referred as "The Bank"), hereby undertake to pay to the Government an amount not exceeding Rs……. (Rs only) on demand by the Government within 10 days of the demand.

3. We..... (Name of the Bank) do here by undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likelyto be due from the said contractor. Any such demand made on the Bank shall be conclusive asregards 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.....(Rs only).

4. We..... (Name of the Bank) ....., further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractorin any suit or proceeding pending before any court or Tribunal, our liability under this BankGuarantee 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 thecontractor shall have no claim against us for making such payment.

5. We..... (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

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

here under to vary any of the terms and conditions of the said agreement or to extend time ofperformance 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 beinggranted to the said contractor or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said contractor or by any such matteror thing whatsoever which under the law relating to sureties would, but for this provision, haveeffect of so relieving us.

6. We..... (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 firstinstance without proceeding against the contractor and not withstanding 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 constitution of the bank or the Contractor.

8. We..... (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……. (Rsonly) unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all ourliabilities under this guarantee shall stand discharged.

Date.

Witness:

1. Signature..... Authorized signatory

Name and address Name

Designation

2. Signature…….. Staff code no.

Name and address Bank seal

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

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

NIT FORM CPWD- 7

GOVERNMENT OF INDIA

CENTRAL PUBLIC WORKS DEPARTMENT

STATE: MAHARASTRA BRANCH: B & R

Percentage Rate Tender and Contract for works

Tender for the work of: - : Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

To be uploaded by 11:00. Hours on 27.11.2026 to on website: www.etender.cpwd.gov.in

(i) To be opened in presence of tenderers who may be present at 11.30 hours on 27.11.2026 in the office of The Executive Engineer and Senior Manager (C)-II , CPWD, 1st floor, Kendriya Sadan, Sector 7, CGS Colony, S.M. Rd, Antop Hill, Mumbai-400037, (Phone No**. No. 022 – 35040655 Email id: eesm2mpc2@yahoo.com**)

BID

I / We have read and examined the notice inviting bid, schedule - A, B, C, D, E & F, specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract for CPWD Works of 2023 for Maintenance with amendments up to the last date of submission of bids, clauses of contract, Special conditions, schedule of rates & other documents andRules referred to in the conditions of contract and all other contents in the bid document for the work.

I/We hereby bid for the execution of the work specified for the President of India withinthe time specified in Schedule 'F' viz., user requirement, schedule of quantity and approved drawings and in accordance in all respect with the specifications, designs, drawing and instructionsin writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditionsof contract of 2023 for Maintenance with amendments up to the last date of submission of bids andwith such materials as are provided for by, and in respect of accordance with, such conditions so faras applicable.

I / We agree to keep the bid open for **Thirty (30) days** from the date of last date of receipt of bid 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 bid document.

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

A copy of Earnest Money deposit receipt of prescribed amount deposited in the form ofInsurance Surety Bonds, Account Payee Demand Draft, Fixed deposit Receipt, Banker's Cheque orBank Guarantee (as prescribed) issued by a commercial bank is scanned and uploaded. If I/We, failfurnish to furnish the prescribed 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 Indiaor the successors in office shall without prejudice to any other right or remedy available in law, be atliberty to forfeit the said performance guarantee absolutely, the said performance guarantee shall bea guarantee to execute all the works referred to in the bid documents upon the terms and conditionscontained or referred to those in excess of that limit at the rates to be determined in accordance withthe provision contained in **clause 12.2 and 12.3** (as modified) of the bid form.

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

I/we undertake and confirm that eligible similar work(s) has/have not been got executedthrough another agency on back-to-back basis. Further that, if such a violation comes to the notice ofDepartment, then I/we shall be debarred for bidding 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 Deposited/Performance Guarantee.

I/We hereby declare that I/We shall treat the bid documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from 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:

Witness:

Signature of Contractor

Address: **Postal Address**

Occupation:

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

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…….. (Rs……..
).

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

(a)

(b)

(c)

For & on behalf of President of India

Signature. ……..……

Dated: **Designation ……..**

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

PART-B (PERFORMA OF SCHEDULES:

A TO F FOR CIVIL AND ELECTRICAL

WORK)

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

PROFORMA OF SCHEDULES: A TO F

SCHEDULE 'A':
Schedule of quantity for quoting rates: As per **Page 112 to 129 (For Civil work).**
As per **Page 131 to 146 (For Electrical work).**

SCHEDULE 'D'
Extra schedule for specific requirements
/Document for the work, if any. NIL

SCHEDULE 'E'
Reference to General Conditions of contract: General Conditions of **Contract 2023 for Maintenance as amended / modified** up to the last date of submission of Bid.

Name of work: Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor , IITBRP Building, Mumbai.

Estimated cost of work: **Rs. 1,73,83,488/- (Rs. 96,24,597/- Civil +**
Rs. 77,58,891/ Electrical)

Earnest money: Rs. 3,47,670/- (To be returned after receivingPerformance Guarantee)

Performance Guarantee: (a) 5% of tendered value or ECPT (whichever is higher)
(b) where the tendered amount is less than 80% of ECPT the PG in addition to the requirement under above as (a) , shall increased by an amount equal to the difference between eighty percent (80%) of the ECPT and tendered amount. (As per O.M. No. DG/CON/Maintenance /2023/18 dated 27.02.2026)

Security Deposit: 2.5% of tendered value

SCHEDULE 'F': (General Rules & Directions)

Officer inviting tender: Executive Engineer and Senior Manager (C)-II,
Mumbai Project Circle-II , CPWD, Mumbai -37.

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

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

Definitions:

2(v) Engineer-in-charge (For civil)	Executive Engineer and Senior Manager (C)-II Mumbai Project Circle-II, CPWD,Mumbai-37
Engineer-in-charge (For Electrical)	Executive Engineer and Senior Manager (E) Mumbai Project Circle -II CPWD,Mumbai-37
2(viii) Accepting Authority:	Superintending Engineer and Project Director MPC-II, CPWD, Mumbai-37.
2 (ix)Percentage on cost of materials and labour to cover all overheads and profits.	15% (For Furniture Items it is 7.5%)
2(x) Standard Schedule of Rates :	(For Civil) CPWD, DSR 2023 with amendments up to the date of submission of bids (For Electrical Work) CPWD, DSR 2025 with amendments up to the date of submission of bids.
2(xii) Department	Central Public Works Department
9(ii) Standard CPWD contract Form GCC-2023 for Maintenance, CPWD Form-7 as modified & corrected up to:	Last date of submission of bid.

Clause 1

i) Time allowed for submission of performance Guarantee, program chart, (Time and Progress) and applicable labour licenses, registration with GST, EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance, in days.	05 (Five) days
ii) Maximum allowable extension with late fee @ 0.1% (Non-refundable) per day of performance Guarantee amount beyond the period provided in i) above in days.	NIL

Clause 2

Authority for fixing Compensation under clause 2:	SE Cum PD, MPC-II , CPWD, Mumbai-37

Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start Milestones as per table given below:	07 (Seven) days from Letter of Award or date of handing over of site whicheveris later.

CORRECTIONS - N i l OMMISSION - N i l INSERTION – Nil

AE EE

Milestones as per table given below

Table of Milestones

A. For Civil & Electrical Works

S. No.	Description of Milestone (Financial Progress)	Time Allowed in days from start ofwork	Amount to be withheld in case of non-achievement of milestone
1	1/8th (of the whole work)	1/4th (of the whole work)	In the event of not achieving the necessary progress as assessed from the running payments, 1.25 % of the tendered value of work will be withheld for failure of eachmilestone subject to max. 5%
2	3/8th (of the whole work)	1/2 (of the whole work)	
3	3/4th (of the whole work)	3/4th (of the whole work)	
4	Full	Full	

NOTE: 1. Withheld amount shall be released if and when subsequent milestone is achieved within respective time specified. However, in case milestones are not achieved by the Bidder for the work, the amount shown against each milestone shall be withheld.

2. Intending bidder may submit phasing of activities/milestones based on their resources and methodology at the time of bidding corresponding to physical milestones/stages indicated in the above table. These shall be formed part of the agreement after approval of the accepting authority, otherwise it would be assumedthat agency agrees with the above-mentioned physical milestone.

Time allowed for execution of work : 04 months (No relaxation for Monsson season)

Authority to decide:

i) Authority to convey the decision of shifting of milestone and extension of time: EE&SM (C)-II, MPC-II, CPWD, Mumbai-37.

ii) Authority to decide Rescheduling of milestone and extension of time : SE cum PD, MPC-II, CPWD, Mumbai-37.

iii) Shifting of date of start in case of delay in handing over of site: SE cum PD, MPC-II, CPWD, Mumbai-37.

CORRECTIONS - N i l OMMISSION - N i l INSERTION – Nil

AE EE

Proforma of Schedule: (Clause – V, Schedule of Handing Over of site)

Part	Portion of site	Description	Time period for handing over reckoned from the date of issue of letter of intent
Part A	Portion without any hindrance	Entire site	Site is available.
Part B	Portion with encumbrances		Nil
Part C	Portion dependent on work of other agencies		Not Applicable.

Clause 6 – Applicable Computerized Measurement Book (CMB)

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: 24.06 Lakh (Civil)
19.40 Lakh (Electrical)

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 GST,EPFO, ESIC and BOCW Welfare Board,whatever applicable as submitted by theBidder to the x Engineer-in- Charge**.**

Clause 10A

Testing equipment to be provided by the contractor at Field testing laboratory : List attached as Appendix "A

Clause 10B (ii)

Whether Clause 10B (ii) shall be Applicable : Not Applicable.

Clause 10C

Component of labour expressed as percent of value of work Applicable – 25%.

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

Clause 10CC: Not Applicable

Clause 11

Specifications to be followed for execution of work: CPWD Specifications-2019 Vol. I & IIwith up-to-date correction slips.

Clause 12

Authority to decide deviation beyond 1.25 of contract amount: SE Cum PD MPC-II, CPWD, Mumbai-37. or his successor of thereof.

Clause 12.2. & 12.3

Deviation Limit beyond which Clauses 12.2 & 12.3 shall apply for building work: **No Limit**

Clause 16

Competent Authority for deciding reduced rate. SE Cum PD, MPC-II, CPWD, Mumbai -37 or his successor of thereof.

Clause 18

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

Description of Machinery	**Quantity**
As per Appendix - II	

Clause 19 (C)

Authority to decide penalty for each default: EE and SM (C)-II, MPC-II, CPWD, Mumbai -37

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

AE EE

Clause 19 (D)

Authority to decide penalty for each default: EE and SM (C)-II, MPC-II, CPWD, Mumbai -37.

Clause 19 (G)

Authority to decide penalty for each default: EE and SM (C)-II, MPC-II, CPWD, Mumbai -37.

Clause 19 (K)

Authority to decide penalty for each default: EE and SM (C)-II, MPC-II, CPWD, Mumbai -37.

Clause 25

Conciliator: Special Director General (Mumbai), or his successor, CPWD, Mumbai-20

Arbitrator Appointing Authority: SE Cum PD , MPC-II, CPWD, Mumbai -37 or his successor of thereof.

Place of arbitration: Mumbai.

Clause 32

The Requirement of Technical Representative(s) and Recovery Rates: Applicable as below: -

Sr. No.	Qualification	Number (Major + Minor Component)	Minimum Experience in years	Designation	Rate of which recovery shall be made from the contractor in the event of not fulfilling provision of Clause 32
1	Graduate Engineer OR Diploma Engineer	1 of (Civil Engineering)	2 or 5 respectively	Project Manager Planning / Quality/ Site / Billing Engineer	Rs. 15,000/- Per month per person (Rs. Fifteen Thousands Per Month per person)
2	Graduate Engineer OR Diploma Engineer	1 of (Electrical Engineering)	2 or 5 respectively	Project Manager Planning / Quality/ Site / Billing Engineer	Rs. 15,000/- Per month per person (Rs. Fifteen Thousands Per Month per person)

Assistant Engineers retired from Government services that are holding Diploma will be treated at par with Graduate Engineers.

Diploma holder with minimum 10-years relevant experience with a reputed construction company can be treated at par with Graduate Engineers for the purpose of such deployment subject to that such diploma holder should not exceed 50% of requirement of degree engineers.

The above given strength shall be required to be deployed as and when necessity arisesat site or so directed by Engineer-in-charge.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

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 with up-to-date correction slips for Civil & On the basis of **Delhi schedule of Rates 2022** printed by CPWD with up-to-date correction slips for Electrical
ii)	Variations permissible on theoretical quantities	
a)	i. Cement for works with estimated costput to tender not more than Rs. 25 lakh ii. Cement for works with estimated costput to tender more than Rs. 25 lakh	3 % plus / minus. 2% plus / minus.
b)	Bitumen for 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.

Executive Engineer and Senior Manager (C)-II
MUMBAI PROJECT CIRCLE-II,
CPWD, Mumbai-37.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

Appendix-I

Equipment for Testing of Materials at Site Laboratory

Equipment for conducting necessary tests (as per CPWD Specifications 2019 Volume-I &Vol. II) shall be provided and installed at site in the well-furnished site laboratory by the agency at his own cost. The following laboratory equipment should be in general or as and when required be set up at site laboratory: -

Sl. No.	Equipment	Minimum Qty.
1.	GI tray for mixing / placing mortar	All as per requirement at site and as directed by Engineer-in-charge
2.	Slump cone	
3.	Pumps and pressure gauges for hydraulic testing of pipes	
4.	Graduated glass cylinder	
5.	Sets of sieves for coarse aggregate [40; 20; 12.5, 10; 4.75mm]	
6.	Sets of sieves for fine aggregate [4.75; 2.36; 1.18; 600; 300 & 150 microns]	
7.	Sieve Brushes	
8.	Cube moulds size 70mmx70mmx70mm	
9.	Cube moulds size 150mmx150mmx150mm	
10.	Electronic balance 600gx0.1g. 10kg	
11.	Physical balance weight up to 5 kg	
12.	Needle vibrator	
13.	Measuring jars 100ml, 200ml, 500ml	
14.	Gauging trowels 100mm & 200mm with wooden handle	
15.	Spatula 100mm & 200mm with long blade wooden handle	
16.	Vernier callipers 12” & 6” size	
17.	Digital Micrometre least count. 0.01mm	
18.	GI tray 600x450x50mm, 450x300x40mm, 300x250x40mm	
19.	~~Electric Motor mixer 0.25 cum capacity~~	
20.	Screw gauge 0.1mm-10mm, least count 0.05	
21.	Mortar Cube vibrator	
22.	Counter scale capacity 1 kg and 10 kg	
23.	Iron Weight of 5 kg, 2 kg, 1 kg, 500 gm, 200 gm, 100 gm	
24.	Brass Weight of 50 gm, 20 gm, 10 gm, 5 gm, 2 gm, 1 gm	
25.	Measuring cylinder TPX or Poly propylene capacity 100 ml, 500 ml, 250 ml, 100 ml	
26.	Wash Bottles capacity 500 ml	
27.	Hammer 1lb& 2lb	
28.	Rubber Hammer	

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

29.	Hammer Drill	All as per requirement at site and as directed by Engineer-in-charge
30.	Depth gauge 20cm	
31.	Spirit level	
32.	Plastic or G.I. Buckets 20ltr, 10 ltr, 5 ltr	
33.	Wheel Barrow	
34.	Board for testing fresh fluid concrete.	
35.	Electrical/Diesel mixer of capacity ½ bag concrete mix	
36.	Auto level & staff	
37.	Welding machine 400 Ampere	
38.	Screener for coarse sand and fine sand	
39.	Centrifugal Monoblock water pump min. capacity 2 HP	
40.	7.5 HP percussion drill machine	
41.	Electrical cutter machine	
42.	Low speed (500 – 800 rpm) electrical helical stirrer	
43.	Material mixing container of 20 lit, 40 lit capacities	
44.	Notched trowel	

B) Electrical: -

1. Megger (0 - 1000v)
2. Tongue Tester
3. Aluminum Ladder- Suitable for internal & external electrical work.
4. Tacho Meter
5. Hydro Meter
6. Crimpling tool for all sizes.
7. Wheel ladder for street light repairing
8. Ammeter
9. Voltmeter 0 – 500 volts
10. Chain wrench 2", 4", 6"
11. Pipe wrench up to 4 "
12. Spanners kit
13. Insulation tester
14. Earth resistance tester
15. Lux Meter (Digital)
16. Vernier; Screw gauge (Digital)

Executive Engineer and Senior Manager (C)-II,
Mumbai Project Circle -II,CPWD, Mumbai-37.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

PART-C

(SPECIFICATIONS, TERMS AND CONDITIONS FOR CIVIL COMPONENT)

GENERAL CONDITIONS

1. Except for the items, for which particular specifications are given or where it is specifically mentioned otherwise in the description of the items, the work shall generally be carried out in accordance with the "CPWD Specifications 2019 Vol.- I & II with up-to-date corrections slips Wherever CPWD Specifications are silent, the latest IS Codes/Specifications, NBC 2016 guidelines, MORTH specification or any other specifications as approved by Engineer- in- charge shall be followed.

2. The order of precedence in case of any confusion/dispute will be as follows:

   a. Nomenclature of items given in the schedule of quantities in the tender.
   b. Particular Specifications
   c. Additional Conditions
   d. Special conditions
   e. Contract & Clauses as per Standard CPWD GCC 2023 for Maintenance works.
   f. CPWD Specifications as mentioned in clause 11 under schedule-F and MORT&HSpecifications with up to-date correction slips.
   g. Relevant I.S. Codes or specification.
   h. Directions of Engineer-in-charge shall be applicable where none of the above is tobe applied.

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

3. The agency shall construct suitable site office, laboratory & display room for samples to be used at work.

4. Agency shall make his own arrangement of water, electricity & generator to be used in work. Department will not provide the above facility.

5. Samples including brand / quality of materials and fittings to be used in the work shall be got approved from the technical sanctioning authority, well in advance of actual execution and shall be preserved till the completion of the work.

6. The cost of work shall be inclusive of pumping out or bailing out water if required forwhich 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 causewhatsoever.

7. 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).

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

8. The following modifications to the above specifications shall however apply:

   All stone aggregate and stone ballast shall be of hard stone variety to be obtained from source approved by the Engineer-in-charge.

   Coarse sand should be obtained from source approved by the Engineer-in-charge. The coarse sand shall be screened before using, if required. The same shall be clean andsharp angular grit type. If the sand brought to site is dirty, it must be washed in clean water to bring the sand to the required specifications. Nothing extra shall be payable onthis account.

   Fine sand should be obtained from source approved by the Engineer-in-charge. The fine sand shall be screened, if required. The same shall be clean and sharp angular grit type. If the sand brought to site is dirty, it must be washed in clean water to bring the sand to the required specifications. Nothing extra shall be payable onthis account.

   The precast AAC blocks confirming to BIS 2185 part-III 1984 of approved size shall be used. The blocks shall be obtained from approved manufacturer by the Engineer-in-charge.

9. Unless otherwise specified in the schedule of quantities, the rates tendered by the contractor shall be inclusive of all cost & taxes and shall apply to all leads and lifts and nothing extra shall be payable on this account.

10. The rates for all items of work shall, unless clearly specified otherwise, includecost of all labour, material, tools and plants and other inputs involved in the executionof the item.

11. The foundation trenches shall be kept free from water while works below groundlevel are in progress.

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

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

14. For completing the work in time, the Contractor might be required to work in two or more shifts (including night shifts). No claim whatsoever shall be entertained on this account, not with-standing the fact that the Contractor may have to pay extra amounts for any reason, to the labourers and other staff engaged directly or indirectly on the work according to the provisions of the labour and other statutory bodies regulations and the agreement entered upon by the Contractor with them.

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

16. Any legal or financial implications resulting out of carriage of earth from outside or disposal of earth shall be sole responsibility of the contractor. Nothing extra shall be paid on this account.

17. The work should be planned in a systematic manner so that chase cuttings in the walls, ceilings and floors are minimized. Wherever absolutely essential, the chase shall be cut using chase cutting machines. Chases will not be allowed to be cut using hammer / chisel. The electrical boxes should be fixed in walls simultaneously while raising the masonry work / partitions. The contractor shall ensure proper coordinationof various disciplines viz. sanitary & water supply, electrical, fire-fighting and any other services.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

18. All the hidden items such as water supply lines, drainage pipes, conduits, sewers etc. are to be properly tested as per the design conditions submitted before covering.

19. Quality Assurance

19.1 The contractor shall ensure quality control measures on different aspects of construction including materials, workmanship and correct construction methodologies to be adopted.

19.2 The contractor shall get the source of various raw materials namely aggregate, cement, sand, steel, water etc. to be used for controlled concrete, approved from the Engineer-in-Charge and trial mixes for controlled concrete shall be done using the approved materials. The contractor shall stick to the approved source unless it is absolutely unavoidable. Any change shall be done with the prior approval of the Engineer-in-Charge for which tests etc. shall be done by the contractor at his own cost.

19.3 Similarly, the contractor shall submit brand/make of various materials to be used for the approval of the Engineer-in-Charge along with samples and once approved, he shallstick to it. Any change will have to be got approved from engineer in charge in advance.

19.4 The contractor shall submit shop drawings of staging and shuttering arrangement, stone cladding and other works including mock work as desired by Engineer-in-Charge for his approval before execution. The contractor shall also submit bar bendingschedule for approval of Engineer-in-Charge before execution.

19.5 The contractor shall depute Quality Manager exclusively for enforcement of qualitycontrol. Such Quality Manager should be a qualified graduate engineer with minimum 2 years of similar experience. For all staff to be deployed for quality assurance, the contractor may refer to clause 32 under schedule “F” attached.

19.6 Testing charges of 1st Design Mix concrete of various Grades shall be borne by the contractor. Similarly testing charges of all materials as per the frequency in CPWD Specifications Vol I & II of 2019 with up to date correction slips or as per the directionof the Engineer- in-charge are to be borne by the contractor. Testing of various materials to be used in the work and Design Mix shall be done by contractor through

IIT Mumbai, VJTI Mumbai, NIT or any Govt. laboratory or approved testing labs bycompetent authority and allowed by Engineer-in-charge.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

20. Safety Precautions:

Contractor shall within two weeks of award of work, submit to the Engineer-in-Charge for his approval, list of measures for maintaining safety of manpower deployed for construction and avoidance of accidents.

(Work is tobe executed at 5th Floor of IITBRP located in IIT campus which is maintained by the "ASPIRE" as per the ASPIRE requirement of full time Safety Officer will be deployed by the Agency/Contractor over and above the Technical staff mentioned under Clause 32. The rates for Safety Officer service provided shall be paid as per the Quated Rates. Following are the duties as per the ASPIRE Safety Officer will have to perform following duties.

i) Conduct **Safety Induction** for all workers prior to site deployment
ii) Ensure regular **Trainings and Toolbox Talks (TBT)** are conducted and properly documented
iii) Maintain complete records for **labour safety compliance**
iv) Ensure all **tools and tackles** are inspected before use and through **weekly inspections**
v) Maintain **housekeeping before and after work** on a daily basis
vi) Ensure **weekly removal of debris** from the work area
vii) Follow proper **material stacking procedures**
viii) Maintain **MSDS (Material Safety Data Sheets)** for all flammable and inflammable materials
ix) Ensure **safe and organized storage practices** at all times
x) Provide and maintain **First Aid Boxes** at site
xi) Ensure strict compliance with **Hot Work Safety** procedures
xii) Use only **IS/CE approved tools and tackles**, including all electrical power tools and grinders
xiii) Ensure availability and usage of **IS/CE approved Personal Protective Equipment (PPEs)** at all times
xiv) Display and maintain **Emergency Contact Numbers** at site
xv) Submit **Weekly Work Activity Plan along with HIRA (Hazard Identification and Risk Assessment)**
xvi) Submit **Daily Manpower Report**
xvii) Follow the **work permit system**. **Night work permit systems**

21. **Scaffolding and Safety Equipment:**

Considering the nature of the work, which is predominantly of interior nature and involves false ceiling works, overhead installations, and allied E and M works , the contractor shall provide suitable **two-fold aluminium ladders/step ladders and aluminium/Steel scaffolding platforms**, as required for safe execution of the work and inspection by the Engineer-in-Charge. The contractor shall also provide necessary safety equipment, including safety helmets, hand gloves, safety shoes, safety belts/full-body safety harnesses and other Personal Protective Equipment (PPE), as required.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

All ladders and scaffolding shall be of sound construction, stable and

provided with adequate safety arrangements. The contractor shall ensure safe working conditions at all times. **No extra payment shall be admissible for providing, erecting, shifting and maintaining the above T&P and safety equipment, which shall be deemed to be included in the quoted rates.**

22. SAMPLES FOR TESTING: -

22.1 Samples of all materials required for testing is included in the cost of work. Material required for testing in house or through external lab shall be provided free of cost by contractor.

22.2 If any load testing or special testing is to be done for any sample whose strength is doubtful, the cost of the same shall also be borne by the contractor.

22.3 In case there is any discrepancy in frequency of testing as given in list of mandatory tests and that in individual sub-heads of work as per CPWD Specifications, higher of the two frequencies of testing shall be followed.

22.4 The contractor has to establish field laboratory at site as specified in CPWD Specifications and as per list given in Appendix -I including all necessary equipment for field tests at his own cost within one month from the award of work.

23. Maintenance of Register of Tests

All the registers of tests carried out at construction site or in outside laboratories shall be maintained by the contractor which shall be issued to the contractor by Engineer-in-Charge in the same manner as being issued to CPWD field staff.
All samples of materials including cement concrete cubes shall be taken jointlywith contractor by JE and out of this at least 50% samples shall be taken in presence of AE in charge. If there is no JE, all samples of materials including cement concrete cubes shall be taken by AE jointly with contractor. All the necessary assistance shall beprovided by the contractor. Cost of sampling & testing are to be borne by the contractorand he shall be responsible for safe custody of samples to be tested at site/ outside laboratory.

All the tests in field lab at construction site shall be carried out by the Engineering staffdeployed by the contractor and shall be witnessed by the representative of Engineer in charge

All the entries in the registers will be made by the designated Engineering Staff of thecontractor and same should be regularly reviewed by JE /AE /EE cum SM/SE cum ED.

Contractor shall be responsible for safe custody of all the test registers.

Submission of copy of all test registers and Material at site register along with each alternate Running Account Bill and Final Bill shall be mandatory. These registers should be duly checked by Assistant Engineer in division office and receipts of registers should also be acknowledged by Accounts Officer.

If all test registers are not submitted along with alternate R/A Bill & Final Bill, no payment will be released to the contractor.

24. Maintenance of Material at Site (MAS) Register-

All the MAS Registers including cement and Steel Registers which shall be issued to the contractor by Engineer-in-Charge, shall be maintained by Contractor at site and shall be open for inspection by the Department.

25. Some restrictions may be imposed by the district administration / client on the working and on movement of labour, materials etc in the campus. The contractorshall be bound to follow all such restrictions / instructions. Executive Engineer-in- charge of work will issue the identity cards to all persons authorized by him to do work / visit the work site and no claim whatsoever shall on this account will be entertained.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

26. The contractor(s) shall inform/issue notices to the Municipality, police and other authorities that may be required as per law and obtain all requisite permission/ licenses for temporary obstructions, enclosures etc. Contractor(s) shall pay all fee, taxes and charges which may be levied on account of these operations in executing thecontract. He shall make good any damage to the property whether public or private andshall supply and maintain lights either for illumination or for cautioning the public at night. The contractor(s) shall do the barricading enclosing the area as per direction of Engineer-in-charge, and nothing extra will be payable on this account.

27. The Contractor(s) shall take all precautions to avoid accidents by exhibiting necessarycaution boards day and night, speed limit board, red flags, red lights and providingbarriers. He shall be responsible for all damages and accidents caused to existing/newwork due to negligence on his part. No hindrances shall be caused to traffic during theexecution of the work. In case of any accident of labours / contractual staff's the entireresponsibility will rest on the part of the contractor and any compensation under suchcircumstances if becomes payable the same shall be entirely borne by the contractorand department shall have no role on this account.

28. The contractor(s) shall take instructions from the Engineer-in-Charge regarding collection and temporary stacking of materials at site. No excavated earth or building rubbish shall be stacked on areas where roads, services and compound walls are to be constructed. The stacking shall take place as per stacking plan. However, if any changeis required, the same shall be done with the approval of Engineer-in-Charge.

29. The contractor shall give performance test of the entire installation(s) as per the specifications & codes in the presence of the Engineer-in-charge or his authorized representative before the work is finally accepted and nothing extra what-so-ever shallbe payable to the contractor for the test.

30. The Contractor shall bear all incidental charges for cartage, storage and safe custody ofmaterials issued by department/arranged by the contractor.

31. If the work is carried out in more than one shift or during night, no claim on this account shall be entertained. Normally contractor shall not allow executing the RCC, electrical and finishing work at night. Work at night shall, however, be allowed if the site conditions/circumstances so demand. However, if the work is carried out in more than one shift or at night, no claim on this account shall be entertained. The contractor has to take permission from the police authorities etc. if required in such situation the contractor shall make available to the department, propermeans of communication such as Vehicle etc. at his own cost.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

32. Existing drains, pipes, cables, over-head wires, sewer lines, water lines and similar service encountered in the course of the execution of work shall be protected against the damage by the contractor at his own expense. In case the same are to be removed and diverted. The same shall be payable to the contractor. The contractor shall work outthe cost and the same shall be approved by Engineer-in-Charge. The contractor shall not store materials or otherwise occupy any part of the site in a manner likely to hinderthe operation of such services.
33. The contractor shall be responsible for the watch and ward / guard of the building's safety, fittings and fixtures provided by him against pilferage and breakage during theperiod of installations and thereafter till the building is physically handed over to the department. No extra payment shall be made on this account.

SAMPLE OF MATERIALS

34. BIS/ISI marked materials except otherwise specified shall be subjected to quality test at the discretion of the Engineer-in-Charge besides testing of other materials as per thespecifications described for the item/material. Wherever BIS/ISI marked materials arebrought to the site of work, the contractor shall, if required, by the Engineer-in-Chargefurnish manufacturer's test certificate or test certificate from IIT / VJIT/ NIT, any Govt.laboratory and / or approved testing laboratory to establish that the material / procured by the contractor for incorporation in the work satisfies the provisions of specifications / BIS Codes relevant to the material and / or the work done.

    For certain items, if frequency of tests not mentioned in the CPWD Specifications andthen relevant IS code shall be followed and tests shall be carried out as per the frequency specified therein.

35. The contractor shall procure the required materials in advance so that there is sufficient time for testing of the materials and approval of the same before use in the work. The contractor shall provide at his own cost suitable weighing and measuring arrangements at site for checking the weight / dimensions as may be necessary for execution of work. The sealed samples are to be handed over to the testing lab by contractor in the presence of Junior Engineer/Assistant Engineer-in-Charge of work.

36. Malba, rubbish & other waste materials shall be disposed off to recycling agents. No deduction on this account shall be made from the agency.

Additional Conditions

1.0 The tenderer shall acquaint himself with the proposed site of work, its approach roads, working space available etc. before quoting his rates and no claim on this account shall be entertained by the department.

2.0 The contractor(s) shall get himself acquainted with nature and extent of the work and satisfy him about the availability of materials from kiln or approved quarries for collection and conveyance of materials required for construction.

3.0 The contractor(s) may study relevant drawings / details which are available in the office of The Executive Engineer & Senior Manager (C)–II, CPWD,1st floor, Kendriya Sadan, Sector 7, CGS Colony, S.M. Rd, Antop Hill, Mumbai-400037 on all working days between 11:00 to 17:00 hrs.

4.0 The tenderer shall see the approaches to the site. In case any approach from main road is required at site or existing approach is to be improved and maintained for cartage of materials by the contractor, the same shall be provided, improved and maintained by the contractor at his own cost. No payment shall be made on this account.

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

6.0 The contractor shall take all necessary precautions to prevent any nuisance or in-convenience to the owners, tenants or occupiers of adjacent properties and to the public in general and to prevent any damage to such properties and any pollution of smoke, streams and water-ways. He shall make good at his cost and to the satisfaction of the Engineer-in-Charge, any damage to roads, paths, cross drainage works or public or private property whatsoever caused thereon by the contractor. All waste or superfluous materials shall be carried away by the contractor without any reservation entirely to the satisfaction of the Engineer-in-Charge.

7.0 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 building/adjacent properties.

8.0 The contractor shall be entirely and exclusively responsible for the horizontal, vertical and other alignment, the level and correctness of every part of the work and shall rectify effectively any errors or imperfections therein. Such rectifications shall becarried out by the contractor at his own cost to the instructions and satisfaction of the Engineer-in-Charge.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

9.0 The rates quoted by the contractor are deemed to be inclusive of site clearance, setting out work, profile, establishment of reference bench mark, spot levels, construction of all safety and protection devices, barriers, earth embankments, preparatory works, all testing of materials working during monsoon, working at all depths, height and locations etc. unless specified in the schedule of quantities.

10.0 Royalty at the prevailing rates wherever payable shall have to be paid by the contractor on the boulders, metal, shingle, sand and bajri etc. or any other material collected by him for the work direct to revenue authorities and nothing extra shall be paid by the department for the same.

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

12.0 The contractor shall get the water tested with regard to its suitability and conforming to the relevant IS Code. The contractor shall obtain written approval from the Engineer-in-Charge before he proceeds by using the same for execution of work. The water testing charges shall be borne by the contractor.

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

14.0 All materials and fittings brought by the contractor to the site for use shall conform to the samples approved by the Engineer-in-Charge which shall be preserved till the completion of the work. If a particular brand of material is specified in the nomenclature of item, the same shall be used after getting the same approved from Engineer-in-Charge. Wherever brand / quality of material is not specified, the contractor shall submit the samples as per approved list of brand names given in the tender document / particular specifications for approval of technical sanctioning authority. For all other items, materials and fittings of ISI Marked shall be used with the approval ofEngineer-in-Charge. Wherever ISI Marked material / fittings are not available, the contractor shall submit samples of materials / fittings manufactured by firms of reputeconforming to relevant specifications or IS codes and use the same only after getting the approval to avoid delay, contractor should submit samples as stated above well in advance so as to give timely orders for procurement. If any material, even though approved by Engineer-in-Charge is found defective or not conforming to specifications shall be replaced / removed by the contractor at his own risk & cost.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

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

16.0 For construction works which are likely to generate malba / rubbish the contractor shalldispose of malba, rubbish & other unserviceable materials and wastes to the notified specified Municipal dumping ground & disposed off to recycling agents only and underno circumstances these shall be stacked / dumped even temporarily, outside theconstruction premises.

17.0 In the event of any restrictions being imposed by the Security agency, CPWD, Traffic or any other authority having jurisdiction in the area on the working or movement of labour/material, the contractor shall strictly follow such restrictions and nothing extra shall be payable to the contractor on this account. The loss of time on thisaccount, if any, shall have to be made up by generating additional resources etc.

18.0 No payment shall be made for any damage caused by rain, snowfall, flood or any other natural calamity, whatsoever during the execution of the work. The contractor shall be fully responsible for any damage to the govt. property and work for which thepayment has been advanced to him under the contract and he shall make good the sameat his risk and cost. The contractor shall be fully responsible for safety and security ofhis material, T & P, Machinery brought to the site by him.

19.**0 The contractor shall comply with all additional requirements and site-specific instructions necessitated by the prevailing conditions at NTRO, IITB Research Park premises. No extra payment shall be admissible on this account unless specifically provided for in the NIT.**

MODE OF MEASUREMENTS

The measurements shall be recorded and entered in computerized format in thefirst instance by the contractor, and a hard copy shall be submitted to the Department. All entries shall be made exactly as per the existing procedure.

These measurements shall then be 100% checked by the Junior Engineer / Assistant Engineer. The contractor shall incorporate all such changes or corrections, as may be done during these checks, to his draft computerized measurement and submit to the department the corrected computerized measurement Books now in use, and with its pages machine numbered.

Executive Engineer shall test check these computerized measurement as per the existing instructions. This book shall be treated as a Computerized Measurement Book.

The Junior Engineer / Assistant Engineer and the Executive Engineer shall record the necessary certificates for their checks and test checks as per the existing procedure in this Computerized Measurement Book.

The Computerized Measurement Book shall be allotted a serial number as per the Register of Computerized Measurement Books.

Executive Engineer Senior Manager (C)-II,
Mumbai Project Circle -II ,CPWD, Mumbai-37

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

PARTICULAR SPECIFICATIONS

1.0 General

1.1 Wherever any reference to any Indian Standard Specification occurs in the documentsrelating to this contract, the same shall be inclusive of all amendments issued thereto orrevisions thereof, if any, up to the date of receipt of tenders.

1.2 Unless otherwise specified in the schedule of quantities, the rates for all items of 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 sources such as rains, floods, sub soil water table being high and/or due to any other cause whatsoever.

1.3 The work shall be executed and measured as per metric dimensions given in theSchedule of quantities, drawings etc. (FPS units wherever indicated are for guidance only).

2.0 The following modifications to the above specifications and some additional specifications shall however apply.

2.1 All stone aggregate and stone ballast shall be of hard stone variety to be obtained from approved quarries or any other source to be got approved by the Engineer-in-charge.

2.2 Coarse sand should be obtained from Vaitarana River or any other source to be got approved by the Engineer-in-charge and screened as required. The same shall be cleanand sharp angular grit type. If the sand brought to site is dirty it must be washed in clean water.

3.0 SHUTTERING / FORM WORK: -

3.1 The work shall be done in accordance with CPWD Specifications - 2019 Vol. I &Vol. II with up-to-date correction slips.

3.2 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 completing the shuttering panels. Dented, broken, cracked, twisted or rusted shuttering plates shall not be allowed to be used onthe work.

3.3 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 shutter plates in the requisitequantity before assembly of steel reinforcement.

3.4 The joint filler shall be resilient closed cell expanded polyethene and non-tainting asmanufactured by Supreme Industries Ltd. or equivalent manufacturer.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

3.5 Providing joint filler of required thickness in position to substrate using either double sided foam adhesive tape or neoprene synthetic rubber adhesive. When forming expansion joint with the Board in in-situ concrete, joint sealing slots can bereadily formed in the following matter-

Before installing, simply cut off a strip of the required depth. Then install thefiller flush with the finished surface.

Prior to sealing, the top strip can then be pulled easily from the joint to provide an uncontaminated sealing slot ready for preparation and sealing.

4.0 REINFORCEMENT: -

4.1 The reinforcement shall be done as per CPWD Specifications - 2019 Vol.-I &Vol. II with up-to-date correction slips.

4.2 The reinforcement of RCC work includes all operations including straightening, cutting, bending and **binding with annealed steel** wire and placing in position at all the floors with all leads and lift complete.

4.3 **Only CRS / Low Alloy steel is to be used as per IS – 1786 Amendment- V**

4.4 To avoid displacement of bars in any direction and to ensure proper cover, only factory-made round type/rectangular cover blocks shall be used by the contractor. Nothing extra shall be payable on this account.

5.0 FLOORING & DADO

5.1 The work in general shall be carried out as per the CPWD Specifications, as per the architectural drawings and as per the direction of Engineer-in-Charge.

5.2 The Engineer-in-Charge or his representative may, if required, visit the source of supply of the various stones to assess the quality as well as availability of the materialin the required quantities. The Department shall bear the cost of such visits of the officers of the Department.

5.3 Based on the samples approved by the Engineer-in-Charge for various flooring and dado / cladding materials as specified hereinafter, the contractor shall prepare mockup(s) at site of work as specified under relevant flooring and dado / cladding items, for approval of quality of workmanship and material specified. If the quality of the workmanship and the material is as per the required standards and approved by the Engineer-in- Charge, the mock up shall be allowed as part of the work and measured for payment. Otherwise, it shall be dismantled by the contractor as directed by the Engineer-in-Charge and taken away from the site of the work at his own cost. The mock up(s) so made shall be kept till completion of respective works for reference. Nothing extra shall be payable on this account.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

5.4 The stones / tiles shall be transported to site well packed in boxes or otherwise. Theseshall be handled carefully to prevent any damage. The various types of stones and tiles, procured shall be free of any surface defect or any edge damage. The damagedstones and tiles shall not be allowed to be used in the work. So, the contactor shall procure additional quantity of the stone and tiles to cover such contingencies.However, nothing extra shall be payable on this account.

5.5 For the enclosures with circular or curved profile, only the actual area of the flooringshall be measured for payment and nothing extra shall be payable for labour,material, wastages and any other incidental charges.

5.6 For the skirting in the enclosures with curvilinear profiles, the tiles / stones shall be cut to the required size and the shape to match the profile and/ or the joints as per thearchitectural drawings. Similarly, the skirting shall be fixed in a manner as to flush orproject from the finished face of the wall as per the architectural drawings and as directed by the Engineer-in-charge. Any chasing of the C.C masonry blocks requiredfor such fixing is deemed to be included in the cost of masonry. Nothing extra shall be payable on this account.

5.7 For flooring work, the joints between the different types of flooring shall be located asper the architectural drawings or as per the direction of Engineer-in-charge. Also, theContractor shall maintain the uniform level of the finished flooring of the different types unless specifically mentioned on the architectural drawings as per the direction of Engineer-in-charge. Nothing extra shall be payable on these accounts.

5.8 All the flooring works specified under this sub -head shall be adequately protected bya layer of plaster of Paris which shall be laid over a 400-micron PVC film. The protective layer shall be maintained throughout the execution of works and removed just before handing over of the site for which nothing extra shall be payable.

5.9 At the time of handing over, flooring & dado / cladding shall be free of any scratches,stains etc. The flooring & dado / cladding shall be properly cleaned before handing over. However, abrasive cleaners shall not be used to clean the marks and other scratches.

Granite / Italian Marble / Composite Marble stone work

5.10 The Contractor shall procure and submit the samples of different types of stones, for the approval of the Engineer-in-charge prior to the execution of the item.

5.11 The entire supply for each type of stone slab shall be procured from one location (in one quarry), and supplied preferably, in one lot to keep variations to the minimum. The Contractor shall also segregate and sort the slabs according to colour, shade, texture and size of grains etc. to keep variation(s) in stones used at any one location tothe minimum. Any slab with variation in the color, shade, texture and size of grainsetc., not acceptable to the Engineer -in-Charge, shall not be used in the work and shallbe removed and replaced by the Contractor. Nothing extra shall be payable on these

accounts. Also, no claim of any kind shall be entertained from the Contractor on this account.

5.12 Stone slabs shall be pre polished (mirror polished) or given any other surface treatment as per the Architectural drawings and as directed by the Engineer-in-Charge.

5.13 Machine polishing and cutting to required size shall be done with water (as lubricant) only. Sawing shall also be done preferably with water as lubricant but as aspecial case, the Engineer-in -Charge may permit, at his discretion, oil or kerosene aslubricant subject to all kerosene or oil in the body and surface of tiles slabs being thoroughly dried in ovens. Tiles / slabs with stains or patches due to the use of oil orotherwise, either before or after installation, shall be rejected and shall be replaced bythe Contractor at his own cost. Nothing extra shall be payable on this account.

5.14 The stone work may be required to be carried out in patterns, design and / or in combination with stones of different color and shade with or without borders and incombination of different stone slabs / tiles for which nothing extra shall be payable. The stones shall be provided in sizes and shapes as per the architectural drawings andwastages and incidental costs, if any, shall be deemed to be covered in the cost of therelevant items. Nothing extra shall be payable on this account.

5.15 For the flooring portions curved in plan or for in-lay work, the stone slabs (at theedge) shall be cut to the required profile and shape as per the architectural drawings. Nothing extra shall be payable on this account.

5.16 The stone slabs used for providing and fixing in the sills, soffits and jambs of doors, windows, ventilators and similar locations shall be in single piece unless otherwise directed by the Engineer-in-Charge. Wherever stone slab other than in single piece is allowed to be fixed, the joints shall be provided as per the architecturaldrawings and as per the directions of the Engineer -in-Charge. In the cabin areas, thejoints in sills shall preferably be provided in line with the partition wall. Depending on the number of joints, as far as possible, the stone slabs shall be procured and fixedin slabs of equal lengths as per the architectural drawings and as directed byEngineer-in-Charge.

Vitrified and ceramic tiles work

5.17 The contractor shall procure and submit the samples of approved make, shade and thickness of different types of vitrified and ceramic tiles, for the approval of the Engineer-in-charge prior to the execution of the item.

5.18 The mock up (one each) shall be prepared for flooring and dado, for vitrifiedtiles etc.

5.19 The entire supply for each type of tiles shall be procured from one manufacturer/authorized dealer, preferably, in one lot to keep variations to the minimum.

5.20 The tiling work may be required to be carried out in patterns, design and / or incombination with tiles of different color and shade and in combination of

different stone slabs / tiles for which nothing extra shall be payable. The tiles shall be provided as per the architectural drawings.

5.21 For the flooring portions curved in plan, the tiles (at the edge) shall be cut to the required profile and shape as per the architectural drawings. Nothing extra shall be payable on this account.

5.22 The Contractor shall obtain and submit to the Department the manufacturer's test certificate for compliance of various parameters for the material as per the manufacturer's specifications, with each lot of material received at site.

5.23 The flooring and dado / cladding should be set out such that the perimeter/ corner tiles are in excess of half a tile so that the edge panels on both the sides are ofequal sizes, as far as possible. The tiles shall be cut to required size and shape in a workman like manner but with all precautions, as per the manufacturer's specifications.

5.24 For dado / cladding / skirting work, the tiles shall be chamfered at the meeting edges on the corners in a manner that butt edges are not visible. It shall be ensured that the edges shall be ground / filed to chamfer the edges so that the glazing layer at the edges of the tiles is not chipped off otherwise the work shall be rejected and redone by the Contractor at his own cost.

5.25 The proper gradient shall be given to flooring for toilets, verandah, kitchen, court yard, etc. as per the directions of Engineer-in-Charge. For this there may be extra thickness of dry mortar below the tiles/stone slabs. These gradients should be insured in the shuttering itself. Nothing extra shall be paid on this account.

6.0 SANITARY INSTALLATIONS/ WATER SUPPLY/ DRAINAGE

6.1 The work in general shall be carried out as per CPWD Specifications- 2019 Vol.-I & Vol.-II with up-to-date correction slips. Rate shall include all materials, labour and all the operations mentioned in the respective item unless and otherwise specifically mentioned.

6.2 The contractor shall be responsible for 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.

6.3 The contractor shall ensure that senior and experienced plumbers are assigned exclusively for this work. Such plumber(s) should have valid license from the local authorities. The project management shall be done through modern technique. For quality control & monitoring of workmanship, contractor shall assign at least oneengineer who would be exclusively responsible for ensuring strict quality control, adherence to specifications and ensuring top class workmanship for the installation.

6.4 The contractor shall obtain all permits/ licenses and pay for any and all fees required for the inspection, approval and commissioning of their installation without additional cost to the department.

6.5 The contractor shall examine all architectural, structural, plumbing, electrical and other services drawings and check the as-built works before starting the work, reportto the Engineer-in-Charge any discrepancies and obtain clarification. Any changes found essential to coordinate installation of his work with other services and trades, shall be made with prior approval of the Engineer In-Charge without additional costto the department.

6.6 Samples of all materials like valves, pipes and fittings etc. shall be submitted to the Engineer In-Charge prior to procurement for approval and retention by Engineer-in- Charge and shall be kept in their site office for reference and verification till the completion of the Project. Wherever directed a mockup or sample installation shall be carried out for approval before proceeding for further installation without any extra cost.

6.7 All materials and equipment shall conform to the relevant Indian Standards and shall be of the approved make and design. Makes shall be in conformity with list of approved manufacturers as per schedule of quantity & approved list and samples.

6.8 Balancing of all water systems and all tests as called for the CPWD Specifications shall be carried out by the contractor through a specialist group, in accordance with the Specifications and Standards. The installation shall be tested andshall be commissioned only after approval by the Engineer In-Charge. All tests shallbe carried out in the presence of the representatives of the Engineer In-Charge and without additional cost to the department.

6.9 Porcelain sanitary ware shall be glazed vitreous china of first quality free from warps, cracks and glazing defects and shall conform to relevant BIS codes. Colour of sanitary ware, shall be specified or as selected by the Engineer-in-Charge. All sanitaryware's & / or sanitary faucets shall be of any of approvedbrand. Nothing extra shall be payable on this account.

6.10 The chasing, cutting and making holes in the masonry and / or cement concrete and /or RCC works shall be done carefully without causing any damage to the structure. As far as possible, mechanical cutters & core cutting machines shall be used in a workman like manner, for concealing the pipelines and fittings. The chases / holes, somade, shall be made good with the cement mortar of mix 1: 3 (1cement: 3 fine sand)after testing of the pipe lines for leakage. The cost of cutting cores in RCC, cutting holes in masonry & making good the same shall be inclusive in the respective item ofwater supply / sanitary lines. Nothing extra shall be payable on this account.

6.11 All vertical Sanitary & water supply pipes shall be fixed to galvanized M.S supporting frame with "U" shaped G.I bolts, threaded at both ends, as specified, withGI nuts, GI washers, GI cleats etc. as approved by the Engineer-in-charge. Supportingframe shall be fixed with approved anchor fasteners / plumbing nails as directed by the Engineer-in-charge. In all cases, pipelines shall be fixed, minimum 50 mm awayfrom the finished wall face and shall not be fixed directly to the walls. The cost of providing and fixing GI supporting frame, "U" bolts, GI nuts, GI washer, anchor

fastener etc., for clamping the pipes to the supporting frame shall be paid for separately under relevant item.

6.12 Water supply pipes on the terrace shall be fixed to the walls with GI clamps or by supporting on masonry / plain cement concrete piers cast on slabs as approved by theEngineer-in-charge. The cost for providing and fixing G.I. clamps & Plain cement concrete piers etc. shall be included in the cost of water supply pipes.

6.13 Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should confirm to bye-laws and specifications of the local Body / Corporation whereCPWD Specifications are not available. The work of water supply, internal sanitary installation and drainage etc. shall be carried out as per local Municipal Corporationor such local body bye-laws. The contractor shall get the materials (fixtures/fittings) tested by the local body/Corporation authorities wherever required at his own cost and after completion of work shall produce necessary completion certificates from such authorities.

Executive Engineer Senior Manager (C)-II,
Mumbai Project Circle -II ,CPWD, Mumbai-37

PARTICULAR SPECIFICATIONS FOR STRUCTURAL REPAIR WORK

1. Adequate care should be taken by the contractor while dismantling, chiseling, demolishing work, drilling etc. that impact/vibrations are minimum forconsiderations of structural safety and also for inconvenience caused to the users of the building. Perimeter of unsound concrete area shall be marked bymaking shallow cut on cover concrete with cutter machine to reduce the impact ofchiseling. Rates shall cover cost of all inputs of material, labour, T&P etc. involved all the operations in the work.

2. Dismantling and repair work of any type like plaster, flooring, concrete, RCC, Brick work, GI/CI pipes, water proofing etc. shall be for all heights and all levels unless specifically mentioned in the item and no claim for extra cost shall be entertained on this account.

3. Sequence of strengthening work shall be as under:
Gunited repaired structural members shall be allowed to attain at least 7 days strengthbefore any load is transferred to that member.

4 For removal of all type of loose / delaminated / damaged / weak cement plasterfrom the surface of masonry or concrete, a cut normal to the surface all along the boundaries, in regular shape shall be made not to exceed plaster thickness. Then plaster shall be removed completely to expose the parent masonry or concrete surfaceso as not to have any traces of such plaster left. For brick work, the joins have be properly raked and cleaned as per CPWD specifications. The plaster should bedismantled without causing any damage to brick work.

5 CHIPPING / DISMANTLING OF UNSOUND / WEAK CONCRETE &PREPARATION OF SUBSTRATE:

5.1 The perimeter of unsound / weak concrete / delaminated layer of guiniting shall besaw cut to a minimum depth of 12 mm in square / rectangular shape at normal (orthogonal) to the surface of member. Then concrete shall be removed by chipping with standard power-driven percussion type or pneumatic chisel of standard makefrom the demarked area including tapering all edges, making square shoulders of cavities etc. complete (after properly supporting the member with false works). Thechipping shall be done in regular shape, with sides parallel or normal to the direction of the reinforcement and minimum 50mm beyond the perimeter of the spall for singlespall, the repair area should have a minimum width of 100 mm in direction. If a number of spalls are closely located to each other, these should be included in a singlearea marked for repair.

5.1.1 Exposing of rusted/corroded reinforcement:

Reinforcing bar must be further exposed if the remaining concrete is deboned from the reinforcing bar. Chipping around the reinforcing bar shall be continued to completely expose it, if more than half of reinforcing bar perimeter has been exposed. Concrete shall be removed from all around reinforcement including from behind the reinforcing bars to give an average 25 mm (but not less than 15 mm clearair gap) by using standard power-driven percussion type or pneumatic chisel of standard make.

5.2 Adequate care is to be taken not to cut the reinforcement steel and a cover meter couldbe used to estimate the depth of cover, for which nothing extra shall be paid.

5.3 Chipping should be done up to the required depth as decided by the Engineer-in-Charge to reach sound concrete substrate to a near uniform depth for the repair areas.

5.4 Dimensions of area chipped off for RCC slabs, beams, columns etc. shall be measured in centimetres after the chipping / dismantling operation is completed. Thearea of the chipped / exposed RCC surface shall be measured in sq. m. correct to second place of decimal.

5.5 For the RCC members to be completely dismantled, pre-measurement of the dimensions of RCC member to be dismantled shall be recorded before taking up thedismantling operation and volume of concrete dismantled shall be worked out in cubic meters correct to second place of decimal.

5.6 Removal of concrete should begin at the interior of the repair areas and progress towards the boundaries. All edges and cavities shall be square shouldered.

6 CUTTING OF EXISTING REINFORCEMENT

6.1 The existing reinforcement bars to be cut shall be identified and approved for cutting by the Engineer-in-Charge.

6.2 The reinforcement shall be carefully cut with electrical cutter machine to minimize excessive vibrations or damaging the structure and the recovered reinforcement should be straightened, cleaned of concrete by wire brush scrapped and stacked properly with in a lead of 50 meters as directed by the Engineer-in-Charge.

7 CLEANING OF EXISTING REINFORCEMENT

7.1 Before re-casting / jacketing of members or repairs to members with polymer modified mortar, the reinforcement has to be cleaned properly, as specified.

7.2 At first rust shall be removed from the surface of the reinforcement manually using chisels, wire brush, emery paper etc. as directed by Engineer-in-Charge at no extra cost, till the steel surface is cleaned off loose rust.

7.3 Then sulphate and chloride free chemical rust remover, as approved by the Engineer-in-Charge shall be applied with paint brush over the reinforcement surface thoroughly along the full length of rusted reinforcement. After 24 hours of itsapplication the surface shall be cleaned with wire brush to remove all loose particles.

7.4 Rates shall include cost of all materials, labour, T & P etc. involved in all theoperations.

8 ADDITIONAL REINFORCEMENT BARS: -

For introducing additional reinforcement bars for new structural connections or supplementing additional steel area to the existing RCC member, the cross-sectional area (diameter and no. of bars) and length required shall be approved by theEngineer-in-Charge. Also, the depth of embedment of reinforcement bar shall be approved by the Engineer-in-Charge. The holes of specified diameter and depth haveto be bored with diamond or hammer drill machine in RCC. Diameter of the hole shallbe 4mm larger than Dia. of dowel bar. The bored hole in dry state, shall be cleaned with round brush and by blowing air through a tube inserted in the hole and connectedto hand operated blower. Depth of holes shall be checked by the field staff by inserting rod marked with standard length.

Then, epoxy shall be injected from foil pack with help of epoxy dispenser and epoxy cartridge holder and disposable PVC mixing nozzle inserted inside the drilled hole to fill it from bottom/end of hole and slowly withdrawing the pipe while injecting epoxy till mouth of hole to ensure no air void is left inside thehole. Then dowel bar shall be inserted by pressing and turning till end of thehole is reached and shall be allowed to remain undisturbed for minimum 24 hours for epoxy to be air cured.

Rates shall include cost of all inputs of material, labour and T&P etc. involved in allthe operational except the cost of reinforcement.

8.1 WELDING ADDITIONAL REINFORCEMENT:

In case cross sectional area of an individual bar of RCC slab has been reduced by 20%or more, then additional reinforcement shall be welded with existing bar to ensure continuity of the reinforcement of equal strength of original bar. If any existingreinforcement bar is found displaced/loosened, same hall be secured at its design location.

9 SHEAR KEYS: -

Shear keys shall also be provided in similar manner as illustrated in para 8.0above. The shear key bars cut and bent to the required shape shall be embedded in parent concrete to a minimum depth of 50 mm or longer as specified in the item. Rates shall include cost of all materials, labour and T & P etc. involved in all the operations.

CORRECTIONS - N i l OMMISSION - N i l INSERTION - Nil

10 CLEANING OF EXPOSED RCC / CONCRETE SURFACE, INSERTING NIPPLES AND INJECTION GROUTING: -

10.1 The final chipped off concrete surface and exposed reinforcement, if any of the affected structural member should be cleaned off all loose and foreign materials by free air blast and then with water and allow it to dry.

10.2 For the honey combed portion of the concrete or cracked concrete, drill holes at least 18 mm in diameter and depth up to 60 mm or behalf the member thickness whichever is less, at the required spacing, as directed by the Engineer-in-Charge.

10.3 For cracked surface open up cracks by making V notch or groove of size 12 mm x 12mm as directed by the Engineer-in-Charge.

10.4 Remove coarse debris and dust in opened up cracks and drilled holes by blowing airwith hand operated blow out pump. Concrete surface required to be grouted shall befree from all loose and unsound material. The prepared surface should be clear of dust which could obstruct tree flow or grout material and also impede its bonding withconcrete surface. Saturate the concrete in vicinity of crack / honey combed concrete surface with water (but without excess water) only if the cementations / polymer admixed grout to be injected.

10.5 Insert 12 mm diameter specified injection nipples in holes drilled along cracked linesor in honey combed area of concrete and fix them by sealing on its sides with or polymer modified mortar, as directed by the Engineer-in-Charge.

10.6 Seal the crack or the honey combed surface between the nipples by means of epoxy mortar or polymer modified mortar, as approved by the Engineer-in-Charge. The polymer used shall be of approved grade and polymer modified mortar shall be applied as per specifications mentioned separately for polymer modified mortar. The polymer modified mortar shall be moist cured for 3 days and allowed to gain strength before actual grouting commences.

10.7 To inject grout in nipples, the Cementous grout shall be prepared from cement (OPC- 43 grade), sand (sharp, washed well graded generally conforming to zone IV of IS: 383) and water conforming of IS: 456 mixed in specified proportions as directed by the Engineer-in-Charge or as specified in relevant agreement item.

10.8 The emulsified acrylic polymer shall be as specified and shall conform to manufacturer's specification. The physical and mechanical properties of polymers shall conform to manufacturer's specification. One test shall be carried out mandatorily for every lot of acrylic polymers supplied at site, before use in the work.

10.9 The grouting equipment shall be capable of supplying mixing, stirring and pumping grout to the satisfaction of Engineer-in-Charge. It shall have capacity to inject grout ata pressure up to 7 kg / sq. cm measured at grout connections. It shall be capablecement ratio ranging from 0.5 to 1.0.

10.10 Wherever epoxy is to be used the surface of the concrete shall be dried with airblast, before grouting or applying epoxy.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

10.11 The Cementous grout in proportion as directed by the Engineer-in-Charge shall be prepared. It should be lump free of creamy consistency, thoroughly blended and shallbe continuously stirred to keep the cement particles in suspension to retain uniform consistency in grout is injected.

10.12. In case of vertical cracks, the injection shall be started at the lowest nipple and continued until the injected grout begins to flow out at the next higher nipple. The first nipple shall then be closed and injection continued from second until grout flowsout at the third and so on. The process shall be repeated until the whole surface is treated. As soon as the system is cured, the nipples shall be suitably cut.

10.13 In case of honey combed concrete, each grout hole shall be grouted individually. The sequence of injection shall be as per the directions of the Engineer –in-Charge.

10.14 The measurement of grout material shall be on the basis of only the weight of cement consumed in kg.

10.15 Pre measurements of the quantities of such grouting materials brought at site and balance quantities remaining at the end of grouting application shall be recorded separately which will determine the quantity of grout material actually injected. Adequate care is to be taken by the contractor as not to waste the grout. The quantitywhich can be consumed immediately within the prescribed time only shall beprepared in batches.

10.16 The quantity of grout material wasted, discarded, hardened shall not qualify for payment and shall be recorded for deduction at the end of each operation.

11 BOND COAT

11.1 Bond coat is required to be applied for adhesion of applied repair concrete or mortar to the parent concrete. For this, the surface should be thoroughly cleaned by brushes and by blowing air from hand operated pump. The surface shall then be saturated with water minimum 1 hour before application of bond coat and allow surface to attain saturated surface dry condition (SSD).

11.2 PREPARATION OF BOND COAT:

The components of bond coat shall be weighed batched and mixed in specific proportions as indicated in the item. Area of chipped concrete surface shall be assessed roughly. Accordingly required quantity of acrylic polymer for bond coat shall be taken in a plastic bucket/mini drum then proportional quantity of OPC cement by weight (as per manufacturer's specifications) shall be blended slowly under continuous stirring with low speed (500 – 800 rpm) electric stirrer for minimum 2 minutes till a homogenous and lump free slurry is formed. In nocase bond coat slurry shall be prepared without electric stirrer at site.

11.3 The specified bond coat shall be applied by stiff nylon bristle brush. The bond coat shall be worked well onto the concrete surface of the parent concrete including reinforcement surface ensuring that no pinholes are left. The polymer modified

bonding cement slurry shall be applied to a thickness not more than 2mm. Bond coatshall be allowed to reach tacky condition before applying polymer modified mortar orpouring concrete jacket. (Area of exposed RCC unit shall be measured in sqm correctto two decimal places for the purpose of payment).

11.4 Prefabricated shuttering shall then be erected immediately. Fresh concrete / mortar shall be placed / applied while the bond coat is still tacky and well within pot-life / setting period. If adhesive cures to the extent of losing its tack or has set beforeconcrete / mortar is placed / applied, the same shall be removed or slightly abraded and another coat of adhesive / bond coat shall have to be applied by the contractor athis own cost.

11.5 Freshly placed concrete shall be thoroughly consolidated to ensure full bonding of thefresh concrete with the parent concrete. If there is a failure of bond of fresh concrete/plaster with parent concrete surface and it sounds hollow on tapping, the repair workshall be dismantled and redone by the contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge. CPWD specifications for manufacture and placing and curing of concrete shall, in general, be followed unless specified otherwise.

12 ADDITIONAL REINFORCEMENT FOR GUNITING / JACKETING WORK:

12.1 The existing reinforcement bars in the R.C.C. member to be guinited shall be cleaned properly to remove all scales and rust by wire brushing and by rubbing with sand paper, sandblasting wherever possible etc. complete as directed by the Engineer-in-Charge.

12.2 The additional reinforcement shall be provided to hold gunited material/ concrete inposition and shall be so fixed that it is creased in succeeding layer.

12.3 The additional reinforcement, if required, as per the directions of the Engineer-in-Charge, shall be placed in position including cutting, straightening, binding and fixing in position by fixing into the existing concrete by fastening to shear keys and shouldbe secured rigidly so that it does not belly out or get displaced during guniting, jacketing work. The mesh reinforcement shall be fixed in a manner so that it is firmlyheld at least 12mm away from the parent concrete as well as final finished surface. Also, clear spacing between the reinforcement bars shall not be less than 50mm.

12.4 Additional reinforcement if required shall be tied with required lap using G. I. binding wire or welded to the parent reinforcement and also to the shear keys is directed by the Engineer-in-Charge.

12.5 Additional vertical reinforcement shall be anchored to the base of the column by drilling hole of diameter 4 mm larger than the dia of reinforcement bar for a depth of 12 times the dia of the bar and secured it in the hole with epoxy as per standard procedure.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

13 ANTI CORROSIVE TREATMENT:

After cleaning off rust from reinforcement bar, coat of passivating slurry shall be applied on surface of reinforcement bar. Length of reinforcement bar to be treated with passivating coat shall be assessed roughly in advance. Accordingly required quantity of anticorrosive polymer shall be take in a plastic bucket/mini drum and specified proportion of OPC cement by weight (as per manufacturer's specifications) shall be blended slowly under continuous stirring with electric stirrer for minimum 2 minutes till a homogenous and lump free slurry ofcreamy thick consistency is formed. One /Two coats of passivating slurry (as per manufacturer specifications) shall be applied on reinforcing bar by stiff nylon bristlebrush ensuring no pinholes are left. In case application of two coats, the second coatshall be applied minimum six hours after application of 1st coat, The passivating coatshall be allowed to set for minimum 24 hours before operating next item. In no case passivating slurry shall be prepared without electric stirrer.

14 JACKETING BY CEMENT CONCRETE

14.1 All care for casting, curing etc. shall be taken as per CPWD specifications (Ingredients of concrete have to be tested before use. Requisite number of test specimens shall be casted and tested).

14.2 Concrete for jacketing shall be prepared strictly in drum mixture machine (electric/diesel operated) 80% of gauging water for particular batch shall be poured in the mixer drum. Measured quantity of super plasticizer shall bemixed with remaining 10% part of gauging water and then it shall be added to the pre-wetted concrete mixed. Then dry aggregate and cement in specified proportion in sequence shall be added in the mixer drum as per CPWD specifications. Balance water should be added in such a manner to produce homogenous high slum flowing yet very cohesive concrete without bleeding and segregation.

Before pouring concrete in the shuttering mould other repair items i.e. rust removal from reinforcement, anti-corrosive treatment, providing additional reinforcement and shear key etc. shall be completed in advance. Only bond coat shall be applied five minutes before pouring concrete. Concrete shall be poured in the shuttering mould when bond coat reaches tacky condition. There shall be no gap between shuttering and existing concrete surface. Thermocol sheet may be used to plug small irregular gaps.

14.3 While doing jacketing with cement concrete it should be ensured that dropping height of cement concrete should not be more than 60 cm.

14.4 Testing: One mandatory test for every 2.5 cum of concrete or part thereof shall be conducted. The test result should conform to the following strength parameter.

i) Minimum compressive strength: 40 N/mm^2 in 28 days

ii) Minimum flexural strength: 4.42 N/mm^2 in 28 days

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

15 Particular Specification for Micro Concrete

15.1 Preparation of mix at site: 85% to 90% of required quantity of potable watershall be taken in a clean plastic bucket/ mini drum or in a Pan of a Pan mixer. Proportional quantity of micro concrete (as per manufacturer specification) in drystate shall be blended slowly under continuous stirring electric stirrer or in rotating pan of pan mixer for 2 minutes. Then balance quantity of water shall be added to the mix and shall be stirred for another 2-3 minutes to form a homogenous, free flowinglump free mix. 10 mm down coarse aggregate in the range of 25% - 40% by weightcan be mixed where thickness of repair is more than 75 mm depending on sitecondition. Plastic bucket / Mini drum shall be used where volume of repair is less than1 cum, otherwise pan mixer shall be used for preparation of micro concrete at site.

15.2 Application of Micro Concrete: Primary repair items i.e. chipping, rust removal for reinforcement and anticorrosive treatment to reinforcement shall be operated well before jacketing of RCC members. Only bond coat shall be applied five minutes before pouring concrete. Micro Concrete shall be poured in the shuttering mould when bond coat reaches tacky condition. There shall be no gap between shuttering andexisting concrete surface. Thermocol sheet may be used to plug small irregular gaps.

Gaps in the shuttering shall be effectively sealed with masking tape to prevent leakage of fluid concrete through joint of shuttering or gaps between shuttering of RCC members at contact point.

Repair surface shall be hacked immediately after removal of shuttering & it shall be finished with plaster later stage.

15.3 Curing - Curing should be started after the shuttering. The repaired RCC member preferably wrapped with damp hessian cloth wherever feasible. Otherwise, repaired member shall be kept damped by spraying water over it with spraying machine without causing any dripping prevent leaching of polymer content from mortar. The repaired surface shall be moist cured for 3 days followed by air curing at ambient temperature, steam curing shall not be permitted.

15.4 Testing - One mandatory test of Micro concrete for every 2.5 cum of concrete or partthereof shall be conducted. The test shall be conducted on cube of size 75 mm, made from micro concrete. The test result should conform to the following strengthparameter.

i) Minimum compressive strength (as per ASTM C109:99) = 40 N/mm^2 in 28 days
ii) Minimum flexural strength (as per ASTM C580) = 6 N/mm^2 in 28 days

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

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16 Particular Specification for Premixed ready mixed cement mortar

Premixed ready mixed cement mortar as per list of approved makes is to be used inplace of traditional cement-sand mortar for plastering as per following procedure:

a) Surface Preparation: The surface needs to be cleaned and made free from grease,dust and loose particles to ensure proper binding. The surface needs to be pre- wetted with clean water before plastering.

b) Process of mixing:
   i) Required quantity of dry mix shall be taken in a mortar mixing tray.
   ii) Measured quantity of potable water shall be added to dry mix as per manufacturer's specification. Correct ratio of water and dry mix is essentialfor better result.
   iii) The mortar shall be mixed well for 5 to 10 minutes to achieve homogenous and cohesive mix. (Use of mechanical mixer / electrical stirrer is recommended for better results)
   iv) The prepared mix shall remain undisturbed for 5 minutes to dissolve polymeradditive in mortar and shall be mixed once again without adding any water just before use.

c) Method of Application
   i) Pre wetting of surface is required before applying plaster.
   ii) The mixture should be applied within one hour of preparation of mix. This will ensure that the thin layer can be applied without cracking problems and proper cement hydration.
   iii) If the concrete surface is smooth and dense, it is recommended to apply a bondcoat of acrylic polymer of any approved make.
   iv) Readymade mortar shall be applied manually using trowel and care should betaken that it does not expose to direct sunlight, wind and rain during its application.

d) Curing - Curing shall be started after 24 hours of plastering in normal weather condition. After the plaster is completely dried, curing shall be done 2 to 3 timesfor 2 to 3 days. In abnormally dry weather conditions, curing for 5-7 days is required.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

SPECIAL CONDITIONS

1.0 The contractor will have to work according to the programme of work, decided by the Engineer-in-charge for which purpose the contractor should submit a tentative program of the work within 15 days of the date of start of the work. In case of non-submission of program, a penalty @ Rs. 2000/- per week of delay shall be levied in the Running Account Bills. The contractor shall also construct a sample unit, complete inall 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 payment due at agreement rates will be entertained from the Contractor on this account.

2.0 The contractor shall take instructions from the Engineer in charge for stacking of materials in any place. No excavated earth or building material shall be stacked on areas where other buildings, roads, services or compound walls are to be constructed.

3.0 The work shall be carried out in accordance with the Architectural drawings, structural drawings and as per the direction of the Engineer-in-charge. The structuraland architectural drawings shall have to be properly correlated before executing the work. In case of any difference noticed between architectural and structural drawings,final decision, in writing, of the Engineer-in-charge shall be obtained by the contractor. In case of any discrepancy in the item given in the schedule of quantitiesappended with the tender and architectural drawings related to the relevant items, theformer shall prevail unless and otherwise given in writing by the Engineer in charge.Samples shall be prepared before starting particular items of work for prior approvalof the Engineer in charge and nothing extra shall be payable on this account.

4.0 All the material to be used on works shall bear ISI certification mark unless otherwise the make is specified in the item or special conditions appended with this tender document. In case ISI mark materials or the materials mentioned in the tender documents are not available, as per opinion of Engineer-in-charge, which shall be final and binding, the material to be used shall conform to CPWD specifications applicable in this tender or IS Code. In such cases Engineer-in-charge shall satisfy himself about the quality of such materials and give his approval in writing. Only articles classified as first quality by the manufacturers shall be used unless otherwisespecified. All material not having ISI mark shall be tested as per relevant ISIspecification. The Engineer in charge may relax the condition regarding testing if thequantity of the materials required for the work is small. In all cases of use of ISI marked materials proper proof of procurement of materials from authentic manufacturers shall be provided by the contractor to the entire satisfaction of Engineer in charge.

5.0 All materials equivalent to the one specified should be got approved by the Engineer-in- Charge before using the said materials in the work.

6.0 The contractor shall comply with the provision of any Government acts which relate to the work and to the regulations and laws of any local authorities. The contractor shall give all notices required by the said acts, laws etc. and pay all fees payable to such authorities and allow for those contingencies, cost of restorations etc. and all other fees payable to the local authorities.

7.0 The contractor shall comply with proper and legal orders and directions of the local or public authority or municipality and abide by the rules and regulations and pay all fees and charges which he may be liable.

8.0 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.

9.0 BRIEF WORDING OF ITEMS:

9.1 For the purpose of recording measurements and preparing running account bills, the underlined portions of the nomenclature of items included in the Schedule of Quantities shall be adopted as the abbreviated nomenclature of the particular item. The abbreviated nomenclature shall be taken to cover all the materials and operationsas per the complete nomenclature of the relevant item in the agreement and relevant specifications. In the case of items for which abbreviated nomenclature is notindicated in the Schedule of Quantities, the full nomenclature shall be reproducedwhile recording measurements and preparing the bills. Also following abbreviationsmay be adopted.

A) P/L for: Providing and Laying
B) P/F for: Providing and Fixing.
C) C.C. for: Cement Concrete.
D) C.M. for: Cement Mortar.

9.2 In case of extra/substituted items of work for which brief wording is not provided inthe agreement, the full nomenclature of the item shall be reproduced in the measurement books and bill forms of running bills.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

9.3 The full nomenclature of the items shall be adopted in preparing abstract of final bill inthe measurement books and also in the forms for final bills.

10.0. CONDITIONS FOR CEMENT: -

10.1 The contractor shall procure Ordinary Portland Cement (OPC) Grade - 53[conformingto IS: 8112] /Portland Pozzolana Cement (PPC) [conforming to IS: 1489 (Part-I)], as requiredin the work, from reputed manufacturers of grey cement as mentioned in List of Approved Make or from any other reputed cement Manufacturer. Chief Engineer / CPM / ADG / SDG may change the brand of cement depending upon availability in local market but confirming to grade mentioned in NIT and only with the ISI mark, if warranted. The name of the manufacturers should be finalized after taking intoconsideration the availability and cost factor.

10.2 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 casetest results indicate that the cement arranged by the contractor does not conform to therelevant BIS codes, the same shall stand rejected and shall be removed from the site bythe contractor at his own cost within a week's time of written order from the Engineer-in-charge to do so.

10.3 Use of PPC: (Portland Pozzolana Cement) shall be used in RCC structures in accordance with the circular issued by the Directorate General of Works vide No. CDO/SE(RR)/Fly Ash (Main)/102 dt.09.04.2009. The use of PPC shall be regulated as per the conditions stipulated in the circular dt.09.04.2009.

10.4 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 thoseused for concrete made with OPC.

10.5 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.

10.6 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 ofchemical admixtures and super plasticizers with each set OPC, fly ash and /or PPC received from different sources shall be ensured by trails.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

10.7 In environment subjected to aggressive chloride or sulphate attack in particular, use offly ash admixed or PPC based concrete is recommended. In case, where structural concrete is exposed to excessive magnesium Sulphate, fly ash substitution /content shallbe limited to 18% by weight. Special type of cement with low C3A content may also bealternatively used. Durability criteria like minimum binder content and maximum water/binder ratio also need to be given due consideration is such environment.

10.8 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.

10.9 Subject to General Guidelines detailed out as above, PPC manufactured conforming toIS: 1489 (Part-I) shall be treated at par with OPC for manufacture of Design Mix Concrete for structural use in RCC.

10.10 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.

11.11 While using PPC for structural concrete work, no further admixing of fly ash shall be permitted.

11.12 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 the NIT approving authority, in caseless than100MT cement is required for the work, shall be constructed by the contractorat the 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.

11.13 The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cementgodown by the Engineer-in-charge at any time.

11.14 The cement shall be got tested by Engineer-in-charge and shall be used on work onlyafter satisfactory test results have been received. The contractor shall supply free of charge the cement required for testing including its transportation cost to testinglaboratories. The cost of tests shall be borne by the contractor.

11.15 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 38 of the contract and shall be governed by conditions therein. In case Cement consumption

is less than theoretical consumption including permissible variation, work is to be rejected & in case of excess consumption, no adjustment needs to be made.

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

11.17 Damaged cement shall be removed from site immediately by the contractor on receipt of notice in writing from the Engineer-in-charge. If he does not do so within three days of receipt of such notice, the Engineer-in-charge shall get it removed at the cost of the contractor.

11.18 Cement should be kept in godowns under double locks and keys and its consumption account invariably maintained, whether the cement is supplied departmentally or arranged by the contractor. A register should be maintained at the site of each work costing above Rs.20,000.00. This register should contain the columns as shown in Appendix-30. (CPWD Works Manual 2019, SOP No. 3/14).

The pages of the register should be machine numbered and each page initialled by the EE. The cement godown and the register are required to be checked by the AE/EE in-charge of the work as per following schedule.

At least weekly or fortnightly, respectively in case of works at the Headquarters of AE/EE.

Whenever they visit the site of work in case of works located outside the Sub-Divisional / Divisional Head Quarters.

12.0 CONDITIONS FOR STEEL

I) The contractor shall procure TMT bars as required in the work, from reputed manufacturers as mentioned in List of Approved Make or Only ISI marked TMT Bars of various grades shall be procured from Steel manufacturer as per the following guidelines:

II) For reinforced cement concrete or pre-stressed concrete works, the reinforcement bars shall consist of the following grades confirming to IS 1786:2008 (Indian Standard specification for high strength deformed steel bars and wires formconcrete reinforcement): Fe 415, Fe 415D, Fe 415S, Fe 500D, Fe 500S, Fe 550D.**Note: - Only CRS/ Low Alloy steel TMT bars are to be used as per IS-1786 amendment-V**

The contractor shall obtain manufacturer's certificate stating the process of manufacture, chemical composition and test sheet giving result of each

mechanical test applicable to the material purchased and submit it to theEngineer-in-Charge. Each test certificate shall indicate the number of casts to which it applies, corresponding to the number or Identification mark to be found on the material.

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

(III) The steel reinforcement bars shall be brought at site in bulk supply of 10 MT or more or as decided by the Engineer in charge. The steel reinforcement bars shall be stored bythe contractor at site of work in such a way as to prevent distortion & corrosion & nothing extra shall be paid on his account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting & checking.

(IV) The contractor shall procure & use corrosion protected Epoxy Coated steel reinforcement bars only if mentioned in agreement item. Epoxy coating steel bars shallconfirm to ASTM-A 775 M / 77M-93 which sets allowable limit as follows:

i) Coating thickness should be in the range of 130 – 300 microns.
ii) Bending of coated bar around a standard mandrel should not lead toformation of crack in epoxy coating.
iii) No. of pinholes defects should not be more than 6 per meter.
iv) Damaged area on the bar should not exceed more than 2%.

Epoxy coated reinforcement bar shall reduce the bonding between concrete & steel. To get proper bonding between concrete & steel, development length of steel bar should be increased by 20% to 50% as per ACI code (ACI Committee 318:1988).

(V) The contractor shall have to obtain and furnish test certificates to the Engineer-in-charge in respect of all supplies of steel brought by him to the site of work. Samples shall also be taken and got tested by the Engineer-in-Charge as per the provisions in this regard in relevant BIS codes. In case the test results indicate that the steel arrangedby the contractor does not conform to the specifications, the same shall stand rejected,and it shall be removed from the site of work by the contractor at his cost within a weektime of written orders from the Engineer-in-Charge to do so.

(VI) For checking nominal mass, tensile strength, bend test, re-bend test, etc. specimen of sufficient length shall be cut from each size of the bar at random at frequency not lessthan that specified below:

SIZE OF BAR	FOR CONSIGNMENT BELOW 100 MT	FOR CONSIGNMENT ABOVE 100 MT
Under 10 mm dia, bar	One sample for each 25 MT or part there of	One sample for each 40 MT or part there of
10 mm to 16 mm dia. bar	One sample for each 35 MT or part there of	One sample for each 45 MT or part there of
Over 16 mm dia. bar	One sample for each 45 MT or part there of	One sample for each 50 MT or part there of

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

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(VIII) The actual issue and consumption of steel on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of steel shall be worked out as per procedure prescribed in clause 38 of the contract and shall be governed by conditions laid therein. In case the consumption isless than theoretical consumption including permissible variations, recovery at the rateso prescribed shall be made. In case of excess consumption, no adjustment needs to be made.

(IX) The Steel brought to site and remaining unused shall not be removed from site without the written permission of Engineer-in-Charge**.**

The following procedure should be followed in case of removal of rejected/sub-standard materials from the site of work.

Whenever any material brought by the contractor to the site of work is rejected, entry thereof should invariably be made in the site order book under the signature of theAE/AEE giving approximate quantity of such materials.

As soon as the material is removed, a certificate to that effect may be recorded by the AE/AEE against the original entry, giving the date of removal a mode of removal i.e. whether by truck, carts or by manual labour. If removal is by truck, the registration number of the truck should be recorded.

When it is not possible for the AE/AEE to be present at the site of work at the time ofactual removal of the rejected/sub-standard materials from the site the required

certificate should be recorded by the Junior Engineer and the AE/AEE shouldcountersign the certificate recorded by the Junior Engineer.

13.0 Water proofing treatment

13.1 Work shall be executed as per CPWD Specifications, 2019 Vol I & II with up-to-date correction slips.

13.2 The contractor shall associate himself with the specialized firm, to be approved by the Chief Engineer Mumbai – I, CPWD, Mumbai.

13.3 GUARANTEE FOR WATER PROOFING TREATMENT

Five years guarantee in prescribed perform attached must be given by the contractor for the water proofing treatment. In addition, 10% (ten percent) of the cost of these items would be retained as guarantee to watch the performance of the work executed. However, half of this amount (withheld) would be released after Five years / five monsoons after the date of completion of the work, if the performance of the waterproofing works is satisfactory. The remaining withheld amount can be released after completion of five monsoon seasons after the date of completion of work, if the performance of thewaterproofing work is satisfactory. If any defect is noticed during the guarantee period,it should be rectified by the contractor within seven days and, if not attended to, the same shall be got done by other agency at the risk and cost of the contractor. In any case, the guaranteeing firms during the guarantee period should inspect and examine the treatment once in every year and make good any defect observed. However, the securitydeposit can be released in full, if bank guarantee of equivalent amount for five (5) years is produced and deposited with the department.

14.0 Materials obtained from dismantling:

14.1 The contractors in course of their work should understand that all materials (e.g. stone and other materials) obtained in the work of dismantling excavation etc. will be considered Government property and may be issued to the contractor if required for use in this work at rates approved by the Engineer-in-charge, if credit items of dismantled items are not taken in schedule of quantity.

15.0 Materials brought by the contractor.

15.1 The contractors shall have to deposit the approved paints of required color and shade as per actual requirements of the work to be done, with the Engineer-in-Charge at his departmental stores at the site of work.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

a. The paint will be issued to the contractor from time to time according to his requirements for the work in the same manner as the issue of materials stipulated to be issued departmentally.

b. Similar procedure shall be followed for water proofing compound.

c. The day-to-day receipt and issue quantity account of water proofing compound, paints etc. shall be maintained by the Junior Engineer and signed daily by the contractor or his authorized agent.

d. Empty containers should not be removed without the written permission of the Engineer-in-charge.

16.0 DEVIATION FROM THE DRAWINGS, SPECIFICATIONS, STIPULATION, CONDITIONS

The contractor is not to vary or deviate from the drawings, specifications, stipulation,conditions of tender document or instructions to execute any work of any kind whatsoever unless so authorized by the Engineer-in-Charge in writing. For any extrawork involved in consequence of some breach of this contractor or part of the contractor(s), no extra payment will be admissible to the contractor.

17.0 PROTECTION OF WORKS

All finished Works shall be protected from damage that could arise from other construction activities. Work shall be planned and executed in such a manner that work completed by others is not damaged. The compliance of these provisions is deemed to be included in the quoted amount and nothing extra shall be paid on this account. The contractor shall maintain in good condition all work till the completionof entire work allotted to him. Engineer-in-Charge shall not be held responsible for any claims for injuries to persons/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 authorized representatives / labour in his employment during the execution of the work. The compensation, if any, shall be paiddirectly to the department/authority/persons concerned, by the contractor at his own cost.

The contractor shall take adequate precautions for work in progress as well as completed works from flooding particularly during the rainy season.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

18.0 RIGHT TO CARRY OUT THE WORK

The right to carry out the work either in conformity with or in a manner entirely different from the terms of this tender document that may be considered the most suitable before or subsequent to the receipt of tenders due to exigencies of work is reserved with the Engineer-in-Charge.

19.0 PROGRESS OF WORK

Contractor shall give the Engineer-in-Charge on the 10th day of each month, progress report in the prescribed format of the work done during the previous month and program/ proposal for the next month. Such progress report will include the quantum of work done, important materials consumed, and materials available, materials proposed to be procured during the month & photographs of important activities as well as showing progress of the work.

20.0 NIGHT WORK

For completing the work in time, the contractor /manufacturer might be required to work in two or more shifts (including night work) and no claim whatsoever shall be entertained on this account, notwithstanding the fact that the contractor/manufacturerwill have to pay to the labourers and other staff engaged directly or indirectly on the work according to the provisions of the labour regulations and the agreement enteredupon and /or extra amounts for any other reason.

21.0 CONTRACTOR TO INDEMNIFY

The Contractor shall at all times indemnify the department against all claims, damages of compensation under the provisions of payments of Wages Act 1936, Workmen's Compensation Act 1923, Minimum Wages Act 1948, Employment Liability Act 1938, Industrial Disputes Act 1947, Maternity Benefit Act 1961, Interstate Migrant Workmen (Regulation of Employment and Conditions Sewage)Act 1979 or any modifications thereof or any other law relating thereto any rulesmade there under from time to time or as a consequence of any accident or injury toany workmen or other person in or about the works, whether in the employment of theContractor or not, save and except where such accident or injury has resulted fromany act of the department, their agents or servants and also against all costs, chargesand expenses of any suit, action or proceedings arising out of such accident orinjury and against all sum or sums which may with the consent of the Contractor bepaid to compromise or compound any such claim without limiting his obligation andliabilities as above. The Contractor shall insure against all claims, damages orcompensation payable under the Workmen's Compensation Act 1923, or anymodifications thereof or any other law relating thereto. The Contractor shall ensure that similar insurance policies are taken out by his sub-contractor (if any) and shall beresponsible for any claims or losses to department resulting from their failure toobtain adequate insurance protection in connection thereof. The contractor shall procure or cause to be produced by his Sub-Contractors (if any) as the case may be relevant policy or policies and premium receipts as and when required by theEngineer-in-charge .

CORRECTIONS - Nil OMMISSION - Nil INSERTION -

AE EE

22.0 SAFETY OF WORKERS

Over and above the provisions made in CPWD Safety Code the following will also beapplicable**:** In respect of all workmen directly or indirectly employed in the work forthe performance of the contractor's part of this agreement, the contractor shall at his expense arrange for the safety provisions as per Indian Standard Safety codesshown below and shall at his own expense provide for all facilities in connection there with. In case the contractor fails to make arrangement and provide necessary facilities as aforesaid, he shall be liable to pay penalty prescribed under relevant clauses of these tender documents for each default and in addition the Engineer-in- charge shall be at liberty to make arrangement and provide facilities as aforesaid andrecover the cost incurred on that behalf from the contractor, and no claims on this account whatsoever shall be entertained.

i. IS: 3696 (part I) Safety code for scaffolds and ladders.
ii. IS: 3696 (part II) Safety code for scaffolds and ladders Part II ladders.
iii. IS: 4081 Safety code for blasting and drilling operations.
iv. IS: 7293 Safety code for working with construction machinery.
v. IS: 7969 Safety code for storage and handling of building materials.
vi. Any other code and/or as per directions of Engineer-in-charge.

23.0 COMPLIANCE OF LAWS

The contractor shall keep himself fully informed of all acts and laws of the Central and state govt. all local bye laws, ordinances, rules and regulations and all orders and decree of bodies or, tribunals having any jurisdiction or authority which inany manner affect hose engaged or employed on the work or which in any way affect the conduct of the works. Contractor shall at all times, observe and comply with all such laws, ordinances, rules, regulations, orders and decrees, and shall give all noticesand pay out of his own money any fees or charges to which he may be liable. He shallprotect and indemnify the Department and its officers and employees against any claim or liability arising out of violations of any such law, ordinances, legislations, order or decree, whether by himself or by his employees & authorized representatives.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

24.0 PREVENTION OF NUISANCE AND POLLUTION

The contractor shall take all necessary precautions to prevent any nuisance or inconvenience to the owners, tenants or occupiers of adjacent properties and to the public in general and to prevent any damage to such properties and any pollution. He shall make good at his own cost and to the satisfaction of the Engineer-in-charge, any damage to roads, paths, drainage works or public or private property whatsoever caused by the execution of the work or by traffic brought thereon by the contractor. All waste or superfluous materials shall be cleaned away by the contractor without any reservations entirely to the satisfaction of the Engineer-in-charge at no extra cost.

25.0 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, estimatesor 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 besustained by reasons of his failure to comply with the terms and conditions of the contract.

Neither the acceptance by the Engineer-in-Charge nor any payment for acceptance ofthe whole or any part of the work nor any extension of time nor any possession takenby the Engineer-in-Charge shall operate as a waiver of any portion of the contract orany power here in reserved or of any risk to damage. A waiver of any breach of the contract shall not be held to be a waiver of any other or subsequent breach.

26.0 SITE MAINTENANCE

The Contractor shall maintain the Sites in good order during the whole construction period. It is strictly prohibited to bury any kind of waste materials, solid or liquid, in the ground. In the event of accidental discharge of polluting materials, the Contractor shall take immediate mitigating action and shall immediately inform the Client and the appropriate authorities.

27.0 PERSONAL PROTECTIVE EQUIPMENTS (PPEs)

The contractor shall provide required PPEs to workmen to protect against safetyand / or health hazards. Primarily PPEs are required for the following protection.

i. Head Protection (Safety helmets)
ii. Foot Protection (Safety footwear, Gumboot, etc.)
iii. Body Protection (High visibility clothing (waistcoat/jacket), Apron, etc.)
iv. Personal fall protection (Full body harness, Rope- grab fall arrester, etc.)

v. Eye protection (Goggles, Welders glasses, etc.)
vi. Hand protection (Gloves, finger coats, etc.)
vii. Respiratory Protection (Nose mask, SCBAs, etc.)
viii. Hearing protection (Ear plugs, Ear muffs, etc.)

The PPEs and safety appliances provided by the contractor shall be of the standard as prescribed by Bureau of Indian Standards (BIS). If materials conforming to BIS standards are not available the contractor as approved by the Engineer-in-charge shallprocure PPE and safety appliances

All construction workers should be provided with high visibility jackets with reflective tapes confirming to the requirement specified under BS EN 471: 1994. Theconspicuity of workmen at all times shall be increased so as to protect them from speeding vehicular traffic.

The contractor shall provide safety helmet, safety shoe and high visibility clothing forall employee including workmen, traffic marshal and other employees who are engaged for any work under this contract as per the following requirement.

In addition to the above any other PPE required for any specific jobs like, welding and cutting, working at height, tunneling etc shall also be provided to all workmen and also ensure that all workmen use the PPEs properly while on the job. The contractorshall not pay any cash amount in lieu to PPE to the workers / sub-contractors andexpect them to buy and use during work. The contractor shall at all time maintain a minimum of 10% spare PPEs and safety appliances and properly record and show tothe Engineer-in-charge during the inspections. It is always the duty of the contractorto provide required PPEs for all visitors. towards this required quantity of PPEs shallbe kept always at the security post.

28.0 VISITORS TO SITE

No visitor is allowed to enter the site without the permission of the Engineer-in-charge. All authorized visitors should report at the site office and contractor shall provide visitor"s helmet (White helmet with visitor sticker) and other PPEs like safety shoe, reflective jacket, and respiratory protection etc. as per requirement of the site.

All visitors shall be accompanied at all times by a responsible member of the site personnel. The contractor shall be fully responsible for all visitors" safety and healthwithin the site.

29.0 EMPLOYER'S RISK

a) In the event of any such loss or damage happening from any of the excepted risks defined in GCC 2023 pertaining to permanent works, as in combination with other risks, the contractor shall, if so, required by the Engineer-in-charge, rectify the loss or damage. An addition to the contract price shall be determined treating the work done to rectify the loss or damage as variation/ extra/substituted item, as given in the relevant clauses.

b) Whenever any event as mentioned above occurs, the contractor will notify the Engineer-in- charge, within 14 days and provide a forecast cost of repairs / rectifications of damages / losses. As soon as information demonstrating the effect of such event is available, the Engineer-in- charge shall assess the cost of repairs/rectifications to be paid. In case contractor's forecast is deemed unreasonable, the Engineer-in-charge shall adjust the contract price and/ or extend the contract.

SPECIAL CONDITIONS FOR (REPAIR WORK)

1.0 SCAFFOLDING SYSTEM:

All the scaffolding work required for the execution of work, either internal or external shall be provided by the contractor. It shall be provided strictly with double scaffolding system with all the accessories etc., with adjustable suitable working platforms to access the area to be repaired safely and with ease for surface preparation, application of repairs, inspection etc. It shall be able to take all incidental loads. It should also cater to the safety features for workmen. It shall be stiffened with bracings, runners, connection with the building etc. It shall be ensured that no damage is caused to the building due to scaffolding. Inadvertent damages caused, if any, shall be made good by the contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge.

2.0 FALSE WORK:

The false work required to be carried out to facilitate repair work shall be provided by the contractor and nothing extra shall be payable on this account. Before structural repair is carried out, the structural member to be repaired should be relieved of stresses and strains and for this the self-load and imposed load over the structural members being repaired should be suitably transferred to the false work and adjoining existing structural members safely taking into account the capacity of the false work and also of the adjoining structural members. Also sequence of fixing and removal of false work including safe load transfer should be pre - decided and followed.

False work shall be strong enough to withstand all the dead and live loads and forces /impacts caused by dismantling, chipping, ramming, vibration of concrete and other incidental loads imposed over it including that of working platform, workers and

personnel etc. during and after repair work. It shall be made sufficiently rigid by usingadequate ties and braces etc. De-shuttering and removal of false work should be doneafter the lapse of specified time and re-propping done, if required, after de -shuttering,as approved by the Engineer-in-Charge.

False work shall be carried out using steel tubular sections with extension pieces or with steel built up sections to ensure relief to structural members from stresses. No timber ballies etc. shall be used.

(a) The columns to be repaired shall be supported for full height of the building, to relieve its axial load through its adjoining intersecting beams and / or slabs etc. all floor levels. This shall be done even if only one storey length out of many stories lengths of the same column has been identified for structural repairs. The loads relieved are required to be transferred directly through props and supports on to the building foundation system or to the firm ground. Under no circumstances, the column load above this storey should be transferred by transfer through adjoining upper or lower intersecting beams alone.

(b) The beams to be repaired shall be relieved of stresses and strains by suitably supporting the RCC slabs, which are contributing load to that beam. To avoid over stressing of any existing flexural members receiving the transferred load of the distressed beam, the steel props and supports shall be taken and continued to the firmground. For upper stories the steel props shall be taken at least two stories below or asdirected by the Engineer-in-Charge.

(c) The RCC slabs to be repaired shall be relieved from stresses by prop and support andsimultaneously care to be taken to avoid its collapse during the repair process. However, supports should preferably be, not farther than 1.2 m x 1.2m. To avoid overstressing of existing flexural members receiving load of the distressed RCC slab, thesteel props and supports provided shall be taken and continued to the firm ground orat least two slabs below or as directed by the Engineer-in-Charge.

3.0 All warning boards and displays, such as REPAIR WORK IN PROGRESS, KEEP AWAY FROM BUILDING, NO PARKING etc. along with sufficient supervisory staff on ground shall be provided by the contractor, wherever required. Nothing extra shall be payable on this account.

4.0 Since the work is to be carried out in the occupied buildings, proper sequencing as regards dismantling of sanitary pipes, GI pipes, toilets etc. shall be done so as to causeminimum in-convenience to the occupants besides taking care of the constraint of keeping the system functional during repairs by making temporary arrangements, asrequired. Nothing extra shall be payable on this account.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - N

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5.0 The area of dismantling / guiniting / re-plastering / repairing as per relevant items etc. given in the tender may have to be got done in patches, at different heights / levels also for which nothing extra shall be payable.

6.0 Lifting of materials such as cement, sand, wooden planks etc. through the building lifts is prohibited. No mixing or offloading etc. of mortar / cement concrete etc. overthe open terrace / flooring shall be permitted. Arrangements as deemed it shall be made by the contractor for mixing/ lifting/offloading all materials etc. at no extra cost.

7.0 PRODUCT DELIVERY STORAGE AND HANDLING: -

7.1 The contractor shall construct storage space for chemicals and other materials to ensure that the storage conditions are as recommended by the manufactures.

7.2 All the materials shall be procured and delivered in sealed containers with labelsequable and intact.

7.3 All the chemicals (polymers, rusticides, epoxy water proofing compound etc) shall be procured in convenient packs, say 20 liters (Kgs.) capacity packing only or as approved by the Engineer-in-Charge and not in bigger capacity containers, say 200-liter (Kgs.) drums.

7.4 All required material shall be got approved, procured and deposited with the departmental supervisory staff. The material will keep in joint custody of the contractor and the department. The watch and ward of such material shall however, remain to be the responsibility of the contractor and no claim, whatsoever, on thisaccount shall be entertained. Different containers of each chemical shall be seriallynumbered on packing and also consumed in that order. Day to day account of receipt, issue and balance will be regulated by the department and proper account shall be maintained at site of work in the prescribed from as per standard practice.

7.5 All the chemicals shall be procured by the contractor directly from the manufacturer or their authorized dealers and copies of challans / cash memos towards the quantity of various chemicals procured shall be made available by the contractor to the department and the same shall be kept in record. The name of manufacturers, manufacturer's product identification, manufacturer's mixing

instructions, warning for handling and toxicity and date of manufacturing and shelf life shall be clearly and legibly mentioned on the labels of each container.

7.6 The contractor shall submit for the chemicals procured, manufacturer's and /or authorized dealer's certificate regarding supplying and verifying conformance to thematerial specification, as specified.

7.7 All filled containers shall be handled in safe manner and in a way to avoid breakingcontainer seals.

7.8 Empty containers of the chemicals should not be removed from site till the completion of work and shall be removed only with the written approval of the Engineer-in-Charge.

7.9 All arrangement for measuring, dosing and mixing of material / chemicals at site hasto be made by the contractor. Nothing extra shall be payable on this account.

7.10 Contractor shall suitably advise his site Engineer and all the workers as regard safe handling of chemicals. Necessary protective and safety equipment in form of hand gloves, goggles etc. shall be provided by the contractor at no extra cost and also usedat site.

7.11 All incidental charges of any kind including cartage, storage and wastage and safe custody of material etc. shall be borne by the contractor and no claim, whatsoever, shall entertained on this account.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

LIST OF SPECIALISED ITEMS:

i. Water proofing treatment work.
ii. Furniture work.
iii. Any other item decided by Engineer-in-charge.

Procedure for Execution of the Specialized Items:

Such items should be got executed only through associated agencies specialized in these fields. The contractor shall indicate the name(s) of his associated specialized agencies those fulfilling the conditions described in SOP No. 4/7 of CPWD Works Manual-2022 as early as possible and within one month of award of work to Engineer-in-Charge for approval of competent authority.

Specialized Agencies for works shall be approved by the competent authority. The contractor shall quote the rates after careful study of contract conditions, specifications, drawings & schedule of quantities.

No payment shall be made unless, for civil as well as E& M work component, unless the main contractor finalize the specialised agency for E & M work.

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

For specialized items, the main contractor cannot work as a specialized agency unless his name is already included in the list of approved specialized agencies for these items. The contractor shall get these items executed through the specialized agencies as approved by competent authority.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

SPECIAL CONDITIONS FOR MODULAR FURNITURE/ FURNITURE WORKS

1. Scope

The scope shall include detailed site verification, preparation of shop drawings, manufacturing, supply, transportation, unloading, storage, handling, installation, fixing, testing, adjustment, commissioning (where applicable), cleaning and handing over of all furniture items complete in all respects.

The quoted rates shall include all labour, materials, hardware, accessories, fasteners, connectors, adhesives, consumables, lifting equipment, transportation and incidental works required for satisfactory completion.

2. Certification.

The following requirements shall be applicable to all furniture items covered under this Schedule:.

The OEM shall possess valid ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 and ISO 50001:2018 certifications accredited by NABCB, together with AIOTA, Indoor Air Quality (IAQ)-SCS Global, MSME Sustainable ZED Gold, Active BIFMA Membership & BIFMA Compliance on at least 20 products.

Documentary evidence in support of the above certifications shall be submitted before supply. All furniture items shall confirm to the approved sample & approved technical specifications.

As per the Governments initiative to pledge for low carbon emission and procure green furniture, the OEM should offer the product which is having low VOC emission and the manufacturer should have SBTi (Science Based Targets initiative) commitment carbon reduction aligned to a 1.5°C pathway which can be further validated on the official website of SBTi. Screenshot of website should be attached.
OEM should have BIS for table, chair, workstation and metal storage.

3. **Interior Decorator for micro-planning**

The Contractor/Agency shall engage an Interior Designer for micro-planning and coordination of the interior works. No separate payment shall be made on this account, and the cost shall be deemed to be included in the quoted rates.**3. Site Measurements**

The contractor shall verify all dimensions at site before commencement of manufacturing.

Measurements shown in drawings are indicative. No furniture shall be manufactured based solely on tender drawings without actual site verification. No extra payment shall be admissible due to dimensional variations.

4. Shop Drawings

The contractor shall prepare detailed shop drawings showing:

i) Layout
ii) Elevations
iii) Sections
iv) Joinery details
v) Cable management

vi) Hardware locations
vii) Electrical cut-outs
viii) Fixing details
ix) Material schedule
x) Colour schedule

Manufacturing shall commence only after written approval of Engineer-in-Charge.
Approval of drawings shall not relieve contractor from responsibility of proper functioning.

5. Prototype

Before bulk production, contractor shall fabricate one complete prototype/sample of each furniture item.

The prototype shall be inspected by Engineer-in-Charge.

Bulk production shall commence only after written approval.

Approved sample shall remain at site till completion and shall be treated as quality benchmark.

6. Factory Inspection

Engineer-in-Charge reserves the right to inspect manufacturing facility at any stage.

The contractor shall provide free access to:

i) Raw material storage

ii) CNC section

iii) Edge banding section

iv) Pressing section

v) Assembly section

vi) Powder coating plant

vii) Upholstery section

viii) Packing section

Any deficiencies observed shall be rectified before dispatch.

7. Manufacturing Facilities

Furniture shall be manufactured only in factory having minimum facilities such as:

i) CNC Beam Saw

ii) CNC Router

iii) CNC Boring Machine

iv) Automatic Edge Banding Machine

v) Hydraulic Hot Press

vi) Membrane Press (where applicable)

vii) Powder Coating Plant

viii) Metal Fabrication Shop

ix) Upholstery Section

Manual fabrication shall not be accepted except minor finishing works.

8. Materials

All materials shall be new and unused.
Second-hand, repaired or reclaimed material shall not be permitted.
Only approved brands shall be used.

9. Plywood

Marine plywood shall conform to IS 710.
Commercial plywood shall conform to IS 303 wherever specified.
Only calibrated plywood shall be used.
Moisture content shall conform to relevant IS standards.

10. Laminates

Decorative laminate shall conform to IS 2046.
Shade and texture shall be approved before procurement.
All laminates shall be machine pressed under hydraulic hot press.
Hand pasting shall not be accepted.

11. PVC Edge Banding

PVC edge banding shall be minimum 2 mm thick unless otherwise specified.
Application shall be through automatic edge banding machine using hot melt EVA adhesive.
Hand fixing shall not be accepted.
Visible glue marks shall not be permitted.

12. Hardware

Hardware shall be of approved makes only.
Soft closing hinges, telescopic channels, locks, handles, connectors and levellers shall be compatible with the furniture system.
Hardware shall be installed strictly as per manufacturer's recommendations.

13. Aluminium Components

Extruded aluminium sections shall conform to Grade 6063-T6.
All aluminium members shall be straight, defect free and powder coated/anodized as specified.

14. Steel Components

Steel shall conform to relevant IS standards.
CRCA sheet thickness shall be as specified.
All welds shall be properly ground and finished.
Sharp edges shall not be permitted.

15. Powder Coating

Steel components shall undergo:

- Degreasing
- De rusting
- Phosphating
- Passivation
- Electrostatic powder coating

Minimum coating thickness:
50 microns DFT
Coating shall be uniform and free from pinholes, blisters or peeling.

16. Upholstery

Fabric shall be approved before manufacture.
Shade variation shall not be permitted.
Fire retardant fabric shall be provided wherever specified.

17. Ergonomics

Finished furniture shall comply with approved ergonomic dimensions.
Table height, chair height, workstation clearance, knee space and storage dimensions shall conform to approved drawings.

18. Cable Management

All workstations shall include a complete cable management system. Separate routing shall be provided for Power, LAN, Voice, and AV cables. Sharp bends shall not be permitted unless otherwise specified in the tender documents or permitted by the Engineer-in-Charge. The decision of the Engineer-in-Charge in this regard shall be final.

19. Installation

Furniture shall be installed by trained technicians.
Floor protection shall be provided during installation.
Damage to finished flooring, walls or ceilings shall be made good by contractor without extra cost.

20. Coordination

Contractor shall coordinate with Electrical, HVAC, Fire Alarm, Audio Visual, CCTV, Access Control and IT agencies before installation.
Necessary cut-outs shall be made without extra payment.

21. Finish

Finished furniture shall be:

i) Level
ii) Plumb
iii) Square
iv) Properly aligned

Visible defects such as scratches, dents, chips, laminate bubbles, open joints or colour variation shall not be accepted.

22. Packing

Furniture shall be factory packed using protective wrapping.
Corners shall be protected.
Finished surfaces shall not be damaged during transportation.

23. Inspection Before Dispatch

No furniture shall be dispatched without inspection by Engineer-in-Charge if required.
Inspection at factory shall not relieve contractor from quality responsibility.

24. Testing

Engineer-in-Charge may require testing of:

i) Plywood
ii) Laminates
iii) Powder coating
iv) Hardware
v) Upholstery
vi) Metal thickness

Testing shall be carried out through NABL accredited laboratory wherever required.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

25. Completion Documents

The contractor shall submit:

i) Warranty certificates
ii) Manufacturer's certificates
iii) Test certificates
iv) Hardware catalogue
v) Maintenance manual
vi) Cleaning instructions
vii) As-built furniture layout

before final payment.

LIST OF APPROVED MATERIALS (CIVIL WORK)

Note:

1. The Contractor shall obtain prior approval from the Engineer-in-charge before placing order for any specific material or engaging any of the specialized agencies. The Contractor shall make a detailed submittal with catalogues and highlighted proposed specifications, as well as full details of the works proposed to be executed by the specialized agency, as specified.

2. Wherever applicable, the Engineer-in-charge may approve any material equivalent to that specified in the tender subject to proof being offered by the Contractor for equivalence to his satisfaction.

Unless otherwise specified, the brand / make of the material as specified in the particular specifications and in the list of approved materials attached in the tender, shall be used in the work.

LIST OF PREFERRED MATERIALS & SPECIALIZED AGENCIES

1	CEMENT	ACC, ULTRA TECH, J. P. CEMENT, VIKRAM, SHREE CEMENT, BIRLA SHAKATI, CEMENT CORPORATION OF INDIA, VASAVDUTTA.
2	WHITE CEMENT	J.K., BIRLA
3	READY MIX CONCRETE	A.C.C., ULTRATECH, LAFARGE, RMC READY MIX, GODREJ
4	PLASTICIZER,ADMIXTURE, SUPER PLASTICIZER, CURING COMPOUNDS.	SIKA, FOSROC, BASF, SUNANDA CHEMICALS LTD, ROFE / Dr. FIXIT (PIDILITE INDUSTRIES), CICO, ARDEX ENDURA (BAL ENDURA)
5	REINFORCEMENT STEEL (TMT Fe 500D)	SAIL, TATA STEEL, RINL, JINDAL STEEL & POWER LTD. (JSPL), JSW STEEL LTD.
6	STRUCTURAL STEEL	TATA STEEL,SAIL, RINL, JINDAL, APPOLO, VIZAG
7	LOW RELAXATION PRESTRESSING STRANDS	TATA, USHA MARTIN, DP WIRES
8	CONCRETE BLOCKS	CONWOOD, GURJARI, HINDUSTAN, LOK GROUP, SAI BLOCK, VED PMC LTD.
9	AAC BLOCKS	BIRLA AEROCON, ULTRATECH, SIPOREX, ECOLITE
10	ADHESIVE FOR AAC BLOCK / TILES	ULTRATECH, ARDEX FERROUS, ENDURA, SIKA, PIDILITE.

11	FRD FRAME & SHUTTERS	KENWOOD, ANCHOR, KUTTY, BHAWANI FIRE.
12	METALLIC / STEEL FIRE DOOR	SHAKTI, PROMAT NAVAIR, FIRE, GODREJ, KENWOOD, BHAVANI FIRE.
13	FIRE SMOKE SEAL	HILTI, PROMATE FIRE, ATROFLAME, RAVEN
14	FIRE RATED HARDWARE	DORMA, INGERSOLRAND, DORSET, BACKERS FS, GEZE, BHAWANI FIRE
15	FIRE RATED GLASS	SAINTGOBAIN, PROMATE FIRE,
		SCHOTT, PILKINTON, BHAWANI FIRE
16	CALCIUM SILICATE BOARD	STARPAN, HILUX, AEROLITE, PROMAT
17	INTUMESCENT STRIPS	PROMAT, PEMKO, INTUMEX, ASTROFLAME
18	FLUSH DOOR SHUTTERS	JAYNA (JAIN WOOD INDUSTRIES), KENWOOD, ANCHOR, KUTTY, GREENPLY, NATIONAL, MAYURPLY, DUROPLY, CENTURY, (Note: Only ISI marked flush doors shutters to be used)
19	HYDRAULIC DOOR CLOSER, FLOOR SPRING	HARDWYN, DORMA, GODREJ, EVERITE, DORSET, HAFELE, HETTICH, KICH
20	LOCKS & LATCHES	GODREJ, DORSET, HEFELE, YALE, LINK
21	ALUMINUM DOOR / WINDOW FITTINGS	CLASSIC, DEFINE, BHORUKA, JYOTHI, SIGMA, EBCO. (Note: Only ISI marked flush doors shutters to be used)
22	WATER PROOF, COMMERCIAL & FIRE RETARDENT PLYWOOD ABD BLOCK BOARDS	ANCHOR, ARCHID, KITPLY, GREEN PLY, CENTURY, MAYUR PLY, DUROPLY, REGENCY
23	LAMINATES	FORMICA, MERINO, GREENLAM, CENTURY, ARCHID, KITPLY, SUNMICA, DECOLAM, ASISLAM
24	VENEERS	ANCHOR, ARCHID, KITPLY, GREEN PLY, CENTURY, MARINO, MAYUR PLY, DUROPLY, DURIAN
25	PRELAMINATED PARTICLE BOARD EXTERIOR GRADE	GVK NOVAPAN, MARINO, KITPLY, TESA, ECOBOARD, ARCHID, CENTURY, GREENLAM, ACTION TESA, GREENLAM
26	HIGH DENSITY (HDF), PRELAMINATED BOARD	PERGO, GREENPLY

27	WOODEN ADHESIVE	PIDILITE, 3M.
28	SS BUTT HINGES	PRAYAG, OZONE, DORMA, KICH, HAFELE
29	STAINLESS STEEL SCREWS	KUNDAN, ALLOY LTD., GKW, NETTLEFOLD, ATUL FASTENER.
30	ANCHOR / SS STONE CLADDING CLAMPS / DASH FASTENERS	HILTI, FISCHER, ANCHOR, CANNON. BOSCH
31	SS BOLTS, WASHERS, NUTS	KUNDAN, POOJA, ATUL, HILTI
32	S. S. HANDLES	DORMA, KICH, HAFELE, DORSET
33	DOOR STOPPER / INDICATOR BOLT / PUSH PLATE	DORMA, KICH, HAFELE, MAGNUM
34	PVC DOOR FRAMES AND SHUTTERS	RAJSHREE, PLASTIWOOD, SINTEX, ACCURA, DUROPLAST
35	UPVC DOORS, DOOR FRAMES AND WINDOWS	DUROPLAST, LG INDIA, ALUPLAST, PROFILE INDIA, REHAU, FENASTA, WINTECH
36	SS FRICTION HINGES	HETICH, HAFELE, EBCO, ROTO
37	ROLLING SHUTTERS & GRILLS	STANDARD, SWASTIK, SHUBDHWAR
38	STAINLESS STEEL PIPES FOR RAILING	MADE FROM SALEM STEEL, JINDAL OR SAIL SHEET.
39	VITRIFIED TILES	AGL, RAK, KAJARIA, H & R JOHNSON, SOMANY, NITCO, ORIENT BELL, AMBANI TILES
40	CERAMIC TILES	AGL, RAK, KAJARIA, H & R JOHNSON, SOMANY, NITCO, ORIENT BELL, AMBANI TILES
41	GLASS MOSAIC TILES	BISAZZA, ITALIA, CORAL, MRIDUL, BIRLA, JK CEMENT, PAVITPALLADIO
42	ADHESIVE	SIKA, PIDILITE, CICO, FOSROC, DUNLOP
43	GROUTS	ARDEX ENDURA, FERROUS CRETE, MYK LATICRETE, BASF, FOSROC, PIDILITE, SAINT GOBAIN
44	COMPOSITE / ITALIAN MARBLE	NITCO, CLASSIC MARBLE, EURO, ASIAN
45	WOODEN FLOORING	WELSPUN, ACTION TESA, ARMSTRONG, DURAFLOOR, PERGO, GREENLAM
46	WOOD PLASTIC COMPOSITE (WPC) FLOORING	EGO, EBACO, HEM INTERIOR (WPC DECK)

47	PVC FLOORING	LG HAUSYS, ARMSTRONG, GERFLOR
48	CARPET TILES & ROLLS	WELSPUN GROUP, ROYA, SMJ, SHAW
49	GYPSUM BOARD / GLASS REINFORCED GYPSUM TILE FOR FALSE CEILING	SAINT GOBAIN GYPROC INDIA, USG BORAL BOARD, ARMSTORNG, DIAMOND
50	FALSE CEILINGS & SECTIONS	AEROLITE, ANUTONE, ARMSTRONG, KNAUF, USG BORAL, HUNTER DOUGLAS, SAINT GOBAIN, DIAMOND
51	METAL FALSE CEILING	ARMSTRONG,HUNTER DOUGLAS, INTERARCH.
52	CALCIUM SILICATE FALSE CEILING TILES	HILUX, AEROLITE
53	THERMAL INSULATION TREATMENT	PIDILITE, BASF, ROCK INDIA
54	ACOUSTIC INSULATION	U P TWIGA, LLOYD INSULATION, SAINT GOBAIN, KNAUF, ANUTONE
55	ROCK WOOL/ GLASS WOOL	VETROTEX INDUSTRIES PVT. LTD., UP TWIGA, ROCK WOOL INDIA LTD., DOW CORNING, LLOYD INSULATION
56	POLYCORBONATE SHEET	LEXAN, MG POLYPLAST, GE SILICONS, DANPALON, POLYGAL INDIA
57	ALUMINIUM ALLOY SHEET	KALZIP OR EQUIVALENT
58	ZINCALUME PROFILE SHEET	TATA BLUE SCOPE, PENNAR, CRIL (COLOR ROOF INDIA LTD).
59	PRE MIXED CEMENT SAND MORTAR	PURE, WALPLAST, ULTRATECH
60	READY MADE GYPSUM PLASTER	FERROUS CRETE, ULTRATECH, GYPROC
61	WOOD PRIMER	ICI DULUX, ASIAN PAINTS (WOOD PRIMER-WHITE / PINK), BERGER PAINTS, NEROLAC, GODAVARI
62	STEEL PRIMER (RED OXIDE ZINC CHROMATE PRIMER)	ICI DULUX, ASIAN PAINTS, , BERGER, NEROLAC
63	CEMENT PRIMER	NEROLAC, BERGER, BP WHITE OF BERGER, DECOPRIME WT OF ASIAN PAINTS, WHITE PRIMER OF ICI DULUX

64	OIL BOUND WASHABLE DISTEMPER / DRY DISTEMPER	PROFESSIONAL ACRYLIC DISTEMPER OF ASIAN PAINT, MAXILITE OF ICI DULUX, BEAUTY ACRYLIC DISTEMPER OF NEROLAC, BISON ACRYLIC DISTEMPER OF BERGER
65	1st QUALITY ACRYLIC DISTEMPER (WASHABLE / READYMIX / LOW VOC)	ASIAN PAINTS; (TRACTOR AQUA LOOK PAINT), BERGER: (COMMANDO), NEROLAC, ICI DULUX
66	ACRYLIC EMULSION PAINTS (INTERIOR)	PREMIUM INTERIOR EMULSION OF ASIAN, SUPER COVER OF ICI DULUX, BEAUTY GOLD OF NEROLAC, RANGOLI TOTAL CARE OF BERGER, GODAVARI
67	PREMIUM ACRYLIC EMULSION PAINTS (INTERIOR)	ASIAN PAINTS (ROYAL LUXURY EMULSION), NEROLAC (IMPRESSION), BERGER (SILK), ICI DULUX (VELVET TOUCH)
68	PLASTIC EMULSION PAINT	ASIAN PAINTS (APCOLITE HEAVY DUTY PREMIUM EMULSION PAINT), NEROLAC (IMPRESSION), BERGER (EASY CLEAN), ICI DULUX (3 IN 1)
69	WATER PROOFING CEMENT PAINT	PU PAINT,/ ELASTOMERIC PAINT, ASIAN PAINT, BERGER, DULUX, SNOWCEM, GODAVARI
70	ACRYLIC SMOOTH EXTERIOR PAINT	APEX OF ASIAN PAINT, WEATHER SHIELD OF ICI DULUX, XL OF NEROLAC, WEATHER COAT OF BERGER, GODAVARI
71	PREMIUM ACRYLIC SMOOTH EXTERIOR PAINT	APEX ULTIMA OF ASIAN PAINT, WEATHER SHIELD MAX OF ICI DULUX, XL TOTAL OF NEROLAC, WEATHER COAT ALL GUARD OF BERGER, GODAVARI
72	SYNTHETIC ENEMEL PAINT	APCOLITE PREMIUM GLOSS ENAMEL OF ASIAN PAINTS, SYNTHETIC HI GLOSS OF NEROLAC, LUXOL HI GLOSS OF BERGER, GLOSS SYNTHETIC ENAMEL
		OF ICI-DULUX
73	FIRE RETARDANT PAINT	JOTUN, PROMAT, DULUX AKZONOBEL, ASIAN PAINTS
74	EPOXY PAINT	ASIAN PAINT, BERGER, SHALIMAR, NEROLAC, ARDEX ENDURA, ICI, AKZONOBEL

75	WHITE CEMENT BASED PUTTY	MR. PUTTY, BIRLA WALL CARE, J K WHITE, ASIAN, BERGER, ARDEX ENDURA
76	MELAMINE POLISH	ASIAN PAINTS: MELAMINE GOLD, PIDILITE INDUSTRIES: WUDFIN, ICI DULUX; TIMBERTONE.
77	TEXTURED EXTERIER PAINT	ASIAN PAINTS, SPECTRUM PAINTS, HERITAGE, ICI DULUX, NEROLAC, BERGER, ULTRATECH PAINTS
78	UPVC PIPES AND FITTINGS	SUPREME, ASTRAL, ASHIRWAD, FLOW GUARD, FINOLEX, PRINCE, BIRLA AEROCON
79	HDPE PIPES	RELIANCE, JAINPIPES, ORIPLAST, SUPREME
80	CENTIFUGALLY CAST (SPUN) IRON PIPES AND FITTINGS	NECO, SKF, KAPILANSH, RPMF
81	G.I. PIPES AND FITTINGS	SAIL, ZENITH, TATA, JINDAL (HISSAR), PRAKASH SURYA
82	CPVC PIPES & FITTINGS	ASTRAL, ASHIRWAD, FLOWGUARD, BIRLA AEROCON, SUPREME, FINOLEX, PRINCE, FLOWGUARD
83	PPR PIPES	SFMC, PRINCE, KPT PIPES, SUPREME
84	SS PRESS FIT PIPES & FITTINGS	J - PRESS OR EQUIVALENT
85	D I PIPES & FITTINGS	ELECTROSTEEL, JINDAL, TATA DUCTURA, SRIPIPES (LENCO)
86	C P BRASS WATER SUPPLY FAUCETS (FITTINGS) SUPERIOR RANGE	JAQUAR, KOHLER, ROCA, MARC, GROHE
87	C P BRASS WATER SUPPLY FAUCETS (FITTINGS) NORMAL RANGE	HINDWARE, JAQUAR (ESSCO SERIES), PARRYWARE PRIMA(ISI MARKED), CERA ESS, PLUMBER
88	SANITARY WARES	JAQUAR, KOHLER, ROCA, CERA, HINDWARE, PARRYWARE
89	TOILET MODULAR CUBICALS	MERINO BY BESCO , MATRIX CUBICLE SYSTEM, JAGUAR
90	S. S. SINK	NEELKANTH, NIRALI, JINDAL, FUTURA, CERA, DIAMOND, HINDWARE, JAYNA
91	VALVES	ZOLOTO, LEADER, KIRLOSKAR, ARCO, GM, AUDCO,

92	FLOAT GLASS MIRROR	MODIGUARD, SAINT GOBAIN, ASAHI, ATUL
93	NP2 CLASS, R.C.C. PIPES	JAIN SPUN PIPE, K. K. SPUN PIPE, THE INDIAN HUME PIPE CO. LTD., PATEL HUME PIPES
94	S. F. R. C. COVERS	K. K. SPUN PIPE, JAIN SPUN PIPE, S. S. INDUSTRIES, PRAGATI
95	PVC TANKS	SINTEX, PLASTO, LOTUS (ISI MARKED)
96	PAVER BLOCKS / TACTILE TILE	VYARA, SUPER, JOHNSON
97	ALUMINIUM EXTRUSION SECTIONS	JINDAL ALUMINUM LTD., HINDALCO, INDAL BHORUKA ALUMINUM LTD., SAPA PROFILES INDIA LTD., GLOBAL ALUMINIUM PVT. LTD.
98	ANODIZING	LAKSHMI ANODISERS, AURA ARCHITECTURAL COATINGS, ALUFIN, BHORUKA
99	FLOAT GLASS	SAINT GOBAIN, ASAHI GLASS, EMIRATES GLASS, GUARDIAN GLASS, HNG, PILKINTON GLASS
100	REFLECTIVE SOFT COATED / LOW E GLASS	SAINT GOBAIN, ASAHI GLASS, EMIRATES GLASS, GUARDIAN GLASS, GLAVERBEL
101	GLASS PROCESSER	SAINT GOBAIN, ASAHI GLASS, EMIRATES GLASS, GUARDIAN GLASS (SUNGUARD), SEJAL, GLASSTECH, FUSO, FG, GSC, NSD, SCHOTT.
102	SPIDER PATCH FITTING,FOR CURTAIN GLAZING	DORMA, HAFELE, KICH, OZONE, SEVAX OF SAINT GOBAIN
103	GLASS DOOR HARDWARE	DORMA, KICH, HEFELE, OZONE, GEZE, DORSET,
104	AUTOMATIC SLIDING DOOR OPERATING SYSTEM	DORMA OR EQUIVALENT
105	ALUMINIUM COMPOSITE PANEL	ALUDECOR, EUROBOND, ALSTRONG, ALUCOBOND, ALPOLIC
106	EPDM GASKETS	AMEE RUBBER INDUSTRIES PVT. LTD. , BOHRA RUBBER, ANAND NVH, ROOP POLYMER, OSAKA.
107	BACKER ROD	SUPREME INDUSTRIES, NORTON, BOW, AASTHA

108	ALL TYPES OF SILICONE	DOW CORNING, BASF, GE, WACKER
109	MASKING TAPE	3M, SUN, WONDER TAPE, ROOP POLYMER
110	WATERPROOFING COMPOUND (FOR PLASTER & MORTER)	PIDILITE: LW+, ASIAN PAINTS: SMART CARE VITALIA, FOSROC: CONPLAST 421, SIKA: SIKACIM, STRUCO EXCEL, CICO, MYK LATICRETE, BASF INDIA LTD.
111	MEMBRANE WATER PROOFING SYSTEM	BASF, FERROUS, CRETE, SHALIMAR, PIDILITE, ARDEX ENDURA, MYK ARMENTS.
112	WATER PROOFING FOR TOILETS & WET AREAS	FOSROC: BRUSH BOND, CICO: TAPECRETE, DR. FIXIT; PIDIFINE 2K, SIKA: NITO BOND, ASIAN PAINTS: DAMP BLOCK 2K, SUNANDA, PERMA, BASF, ARDEX ENDURA.
113	CRYSTALLINE WATER PROOFING	FOSROC: FOSROC CRYSTALLINE, DR.
	COMPOUND	FIXIT: DR. FIXIT CRYSTALLINE, SIKA: SIKA CRYSTALLINE, ASIAN PAINTS: CRYSTALLINE QUART, BASF, CICO, ARDEX ENDURA
114	APP MODIFIED WATER PROOFING MEMBRANE	SHALIMAR, FERROUS CRETE, PIDILITE, ARDEX ENDURA, HYDROTECH
115	GALVANIZATION	JENCO GROUP, SADHANA ENGINEERING CORPORATION OF STEELITE ENGINEERING LTD.
116	HYDROPHOBIC COATING	DUPONT, DOW CORNING, EVERCRETE, AQUAMIX
117	PVDF COATING	AURA ARCHITECTURAL COATINGS, M. J. COATERS PVT. LTD., S P ARCHITECTURAL COATINGS PVT LTD., AMECO.
118	GLASS FIBER STRAND	SAINT GOBAIN, NIPPON ELECTRIC GLASS CO. LTD, STERLITE
119	FURNITURE	GODREJ, ROCKSWORTH, DURIAN, FEATHERLITE

NOTE:- 1) A List of preferred brand names of Various Materials/Products are shown below for usage in execution of Work. However, approved equivalent material of any other Specialized Companies/ Firms may also be used, in case it

is established that the Brands Specified below are not readily available in the market or in other unavoidable circumstances subject to Approval of the alternate Brand by the Chief Engineer, Mumbai-I, C.P.W.D., Mumbai.

2) It must be ensured, in general, that all materials to be used in the works shall bear BIS Certification mark. In cases where for a particular material/product, BIS Certification Mark is not available, then the material proposed to be procured can be used subject to the condition that it should conform to C.P.W.D. Specifications and relevant BIS codes. In such cases, written approval of the Engineer-in-Charge shall be

Obtained before use of such material in their works.

3) The list given below does not absolve the Executing Agency from their responsibility for using these products. It is only after, they are satisfied about the quality and performance, the products shall be used. To achieve this, proper check on the quality of the product, actually to be used, should be exercised.

4) The Chief Engineer Mumbai-I CPWD, Mumbai reserves the right to add or delete any materials and brands in the list of approved makes.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF FURNITURE WORK SUBHEAD

The agreement made this.....day of..... (Two Thousand……only) between ……...S/o.....(hereinafter called the GUARANTOR of the one part) and the PRESIDENT OF INDIA (hereinafter called the Government of the other part) WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated……and made between the GUARANTOR OF THE ONE PART AND the Government of the other part whereby the contractor inter alia undertook to render the work under said contract structurally stable to fulfil its intended purpose, free from workmanship defects, warping, moisture effect, termite/borer proof, rust free, durable, strong and operational easiness and use of only specified, certified material.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable to fulfil its intended purpose, free from workmanship defects, warping, moisture effect, termite/borer proof, rust free, durable, strong and operational easiness and use of only specified, certified material for the minimum life of THREE Years to be reckoned from the date of completion of the work.

NOW THE GUARANTOR hereby guarantee that work executed by him will remain structurally stable to fulfil its intended purpose, free from workmanship defects, warping, moisture effect, termite/borer proof, rust free, durable, strong and operational easiness and use of only specified, certified material, for the minimum life of THREE 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 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 risk and cost. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and binding.

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

An amount equivalent to 10% of item nos. 14 to 39 will be deducted as from Bills as security and

the same will be refunded after Three years from the date of completion of work. However, the security deposit can be released in full, if bank guarantee of equivalent amount for THREE (03) years is produced and deposited with the department.

IN WITNESS WHERE OF these presents have been executed by the obligator by 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…….

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

GUARANTEE TO BE EXECUTED BY CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER PROOFING WORKS.

The Agreement made this ..... day of ..... two thousand and ..... between ..... son of ..... of ..... (hereinafter called the Guarantor of the one part) and the PRESIDENT OF INDIA (hereinafter called Government of the other part).

WHEREAS this agreement is supplementary to a contract (hereinafter called the Contract) dated ..... and made between the GUARANTOR of the one part and the Government of the other part, whereby the Contractor, inter alia, undertook to render the buildings and structures in the said contract recited completely water and leak-proof.

AND WHEREAS GUARANTOR agreed to give a guarantee to the effect that the said structures will remain water and leak-proof for FIVE years from the date of giving of water proofing treatment.

NOW THE GUARANTOR hereby guarantees that water proofing treatment given by him will render the structures completely leak-proof and the minimum life of such water proofing treatment shall be FIVE years to be reckoned from the date after the maintenance period prescribed in the contract.

Provided that the guarantor will not be responsible for leakage caused by earthquake or structural defects or misuse of roof or alteration and for such purpose:

(a) Misuse of roof shall mean any operation which will damage proofing treatment, like chopping of firewood and things of the same nature which might cause damage to the roof;
(b) Alteration shall mean construction of an additional storey or a part of the roof or construction adjoining to existing roof whereby proofing treatment is removed in parts;
(c) The decision of the Engineer-in-Charge with regard to cause of leakage shall be final.

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 to the satisfaction of the Engineer-in-Charge at his cost, and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-Charge calling upon him to rectify the defects, failing which the work shall be got done by the Department by some other contractor at the GUARANTOR'S cost and risk. The decision of the Engineer- in-Charge as to the cost, payable by the Guarantor shall be final and binding.

That if GUARANTOR fails to execute the water proofing or commits breach thereunder then the GUARANTOR will indemnify the principal and his successors against all loss, damage, cost,

expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and/or cost incurred by the Government the decision of the Engineer-in-Charge will be final and binding on the parties.

An amount equivalent to 10% of item ** will be deducted as from Bills as security and the same will be refunded after Five years from the date of completion of work. However, the security deposit can be released in full, if bank guarantee of equivalent amount for Five (05) years is produced and deposited with the department.

IN WITNESS WHEREOF these presents have been executed by the Obligator _____and by _____and for an 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 OR AND ON BEHALF OF THE PRESIDENT OF INDIA BY _____in the presence of:

1.

2.

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

On Non-Judicial stamp paper of Minimum Rs. 100/-

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

Form of Bank Guarantee for Performance Guarantee / Security Deposit / Mobilization Advance

1. Whereas the Executive Engineer (Name of Division) CPWD on behalf of the President ofIndia (here in after called "The Government") has entered into an agreement bearing number with..... (Name and address of the contractor)……..(Here in after called "the Contractor") for execution of work ..... (Name of work) The Government has further agreed to accept an irrevocable Bank Guarantee for Rs..... (Rs ..... only) valid up to..... (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..... (Name of the bank)…… (Here in after referred as "The Bank"), hereby undertake to pay to the Government an amount not exceeding Rs……. (Rs only) on demand by the Government within 10 days of the demand.
3. We..... (Name of the Bank)……do here by undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceedingRs..... (Rs only).
4. We..... (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 liabilityunder 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..... (Name of the Bank)……,further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner, ourobligation here under to vary any of the terms and conditions of the said agreement or toextend 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 for bear or enforce any of the terms

and conditions relating to thesaid agreement and we shall not be relieved from our liability by reason of any suchvariation or extension being granted to the said contractor or for any forbearance, act ofomission on the part of the Government or any indulgence by the Government to the saidcontractor 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..... (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 atthe 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 constitution of the bank or theContractor.

8. We..... (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……. (Rs……only) unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Date.

Witnesses:

2. Signature..... Authorized signatory

Name and address Name

Designation Staff code no.

Bank seal

3. Signature……..

Name and address

CORRECTIONS - Nil OMMISSION - Nil INSERTION - Nil

AE EE

(SCHEDULE FOR CIVIL COMPONENT)

DETAILED ESTIMATE

Name of work: Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

Schedule of quantities for Interior Civil Works -

Item no	Item Description	Quantity	Unit	Rate	Amount
1	**Sub Head: Earth Work**				
1.1	Supplying chemical emulsion in sealed containers including delivery as specified.				
1.1.1	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	26.00	litre	234.75	6104.00
1.2	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) :				
1.2.1	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole :				
1.2.1.1	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration.	152.00	metre	43.00	6536.00
2	**Masonry Work**				
2.1	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
2.1.1	Cement mortar 1:3 (1 cement :3 coarse sand)	30.00	Sqm	1150.50	34515.00

3	**Sub Head : CLADDING WORK**				
3.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, pre moulded and pre polished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
3.1.1	Granite stone slab colour black, Cherry/Ruby red				
3.1.1.1	Area of slab over 0.50 sqm	5.50	sqm	5136.30	28250.00
3.2	Providing and fixing plywood 4 mm thick, one side decorative veneer conforming to IS: 1328 (type-1), for plain lining / cladding with necessary screws, including priming coat on unexposed surface with				
3.2.1	Decorative veneer facings of approved manufacture	185.00	sqm	1946.25	360056
4	**Sub-Head : Wood and P.V.C. Work**				
4.1	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt/ suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S, including cost of adhesive of approved quality.				
4.1.1	1.0 mm thick	206.00	Sqm	897.30	184844
4.2	Providing and fixing plain lining with necessary screws/nuts & bolts/ nails, including a coat of approved primer on one face, and fixed on wooden /steel frame work, complete as per direction of Engineer-in- charge (Frame work shall be paid for separately).				

4.2.1	12 mm thick commercial ply conforming to IS : 303	416.00	sqm	1224.65	509454
4.3	Providing and fixing cupboard shutter with 19 mm thick one side decorative and other side balancing lamination factory pressed BWP grade marine ply as per IS 710 of approved brand including 2 mm thick PVC edege banding tape with hot glue by edege bending machine etc. with auto closing spring loaded hinges (hydraulic type) etc. complete as per direction of Engineer-in-charge. (Payment of providing and fixing auto closing hinges shall be paid separately)	6.00	sqm	2829.25	16976
4.4	Providing and fixing stainless steel fancy handle of approved make fixed with SS screws etc. complete as per direction of Engineer-in-charge.				
4.4.1	200 mm	3.00	each	186.65	560
4.5	Providing and fixing stainless steel soft closing spring hinges at 0 degree hinges (hydrarlic type) of approved make/brand to cupboard shutters with full threaded steel screws including making necessary recess in board and finished etc. complete as per direction of Engineer-in-charge.	6.00	each	272.00	1632
4.6	Providing and fixing stainless steel soft closing heavy type telescopic drawer channels of approved make 500 mm long with screws etc. complete as per directions of Engineer- in-charge.	5.00	Each set	885.10	4426
4.7	Providing and fixing ready made 304 grade stainless steel Modular kitchen basket and accessories such as right angle basket (Plain Cup & Saucer, plant, Partition, Bottle rack, Thali, Cutlery) kitchen utensil basket, Dinner set basket, kitchen grain basket, Multipurpose basket as per site requirement including finishing (wherever required) and fittings. The same shall be fixed with necessary stainless steel nuts &	50.00	Kg	533.25	26663

	bolst, Stainless Steel screws & telescopic channel etc. as per direction of Engineer-in-charge. (For payment purpose only weight of Stainless steel basket shall be considered excluding weight of all fixing accessories such as nuts, bolts, fasteners telescopic basket channels etc. Payment of providing and fixing telescopic channel shall be paid separately)				
5	**Steel Work**				
5.1	Providing and fixing in position collapsible steel shutters with vertical channels 20x10x2 mm and braced with flat iron diagonals 20x5 mm size, with top and bottom rail of T-iron 40x40x6 mm, with 40 mm dia steel pulleys, complete with bolts, nuts, locking arrangement, stoppers, handles, including applying a priming coat of approved steel primer.	2.60	Sqm	11439.60	29743
6	**Sub-Head : Flooring**				
6.1	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the Eachtch trowel, plier, wedge, clips of required thickness, levelling system and rubber mallet for placing the tiles gently and easily.				
6.1.1	Double charge vitrified tile polished finish of size				
6.1.1.1.1	Size of Tile 600 x 1200 mm	423.00	Sqm	1577.15	667134

6.2	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer) with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make in all colours & shade in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1cement: 3 coarse sand), jointing with grey cement slurry @ 3.3kg/sqm including grouting the joint with white cement & matching pigments etc. complete.				
6.2.1	Size of Tile 600x1200 mm	20.00	Sqm	1623.05	32461
7	**ROOFING**				
7.1	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall				

	screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				
7.1.1	12.5 mm thick tapered edge Glass Reinforced Gypsum (GRG) board conforming to IS: 2095- (Part 3):1996 (Boards with BIS certification marks)	41.00	Sqm	1355.8	555588
8	**Sub-Head : Finishing**				
8.1	12 mm cement plaster of mix :				
8.1.1	1:4 (1 cement: 4 fine sand)	60.00	Sqm	347.05	20823.00
8.2	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	500.00	Sqm	156.05	78025
8.2.1	Providing and applying plaster of Paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	500.00	Sqm	262.70	131350
8.3	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :				
8.3.1	Two or more coats on new work.	30.00	Sqm	155.90	4677
8.4	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre. of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.				
8.4.1	Two coats.	500.00	Sqm	142.80	71400

8.5	Applying priming coats with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound) content.				
8.5.1	With water theneble cement primer on wall surface having VOC content less than 50 grams/litre.	500.00	Sqm	73.95	36975
8.6	Polishing in high gloss/matt finish melamine clear polish on wood work in required colour/wooden shade texture with following process in the sequence as detailed below:	264.00	Sqm	1360.40	359146
	1. The surface to be polished is rubbed with sand paper 80/120 no. and then with sand paper of 160/180 nos.				
	2. Applying two coats of sealer with spray gun and allowing sufficient drying time for 1st coat and 2nd coat is allowed to dry for 8 to 12 hrs.				
	3. On drying of sealer coat, wet rubbing with emery cloth of finer grading with water to remove excess sealer layer and make the surface further smooth after this wet rubbing, then surface is applied with special grade melamine fillers to fill all the small and big holes/grooves etc. Filler coat to be allowed to dry for 4 to 6 hrs on which again a light wet rubbing is done this surface is further allowed to dry for 12 hrs.				
	4. On this, 1st coat of melamine polish is applied with spray gun using melamine clear polish and melamine thinner in required proportion. This 1st coat is allowed to dry for 24 hrs then this dry surface is again fine wet rubbed smooth, which is further allowed to dry for 12 hrs. The final melamine polish is applied with compressor pressure spray gun using melamine clear polish and melamine thinner mixed in required proportion complete as per direction of Engineer-in-Charge. (Finalo coat to be done in 1 or 2 layers without				

	gap of time.)				
9	**Sanitary Installations**				
9.1	Providing and fixing Stainless Steel A ISI 304 (18/8) kitchen sink as per IS:13983 with C.I. brackets and stainless steel plug 40 mm, including painting of fittings and brackets, cutting and making good the walls wherever required :				
9.1.1	Kitchen sink with drain board				
9.1.1.1	510x1040 mm bowl depth 178 mm.	1.00	Each.	6917.20	6917
9.2	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete.				
9.2.1	Flexible pipe				
9.2.1.1	32 mm dia	2.00	Each.	119.55	239
10	**Sub-Head : Water Supply**				
10.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings. This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge : External work				
10.1.1	20 mm nominal outer dia. Pipes.	20.00	metre	274.30	5486
10.1.2	25 mm nominal outer dia. Pipes.	20.00	metre	355.40	7108
10.1.3	75 mm nominal inner dia. Pipes.	15.00	metre	2166.35	32495
10.2	Providing and fixing plasticised PVC connection pipe with brass unions :				
10.2.1	45 cm length				
10.2.2	15 mm nominal bore	2.00	Each.	97.75	196
11	**Sub-Head : Aluminium Work**				
11.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the				

	gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / panelling, C.P. brass/ stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, panelling and dash fasteners to be paid for separately) :				
11.1.1	For fixed portion				
11.1.1.1	Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15)	1111.00	Kg	495.05	550001
11.2	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double acting hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-in-charge (Door handle, lock and stopper etc.to be paid separately).	20.00	Sqm	5325.90	106518
12	**New Technologies and Materials**				
12.1	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I.				

	channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :				
12.1.1	12 mm thick Commercial Ply conforming to IS: 303.	61.00	Sqm	2466.05	150429
12.2	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid door/window/Clerestory windows & other Frames/ Chowkhat comprising of virgin PVC polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibre (wood powder/ rice husk/ wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) fabricated with mitre joints after applying PVC solvent cement and screwed with				

	full body threaded star headed SS screws having minimum frame density of 750 kg/cum, screw withdrawal strength of 2200 N (Face) & 1100 N (Edge), minimum compressive strength of 58 N/mm2, modulus of elasticity 900 N/mm2 and resistance to spread of flame of Class A category with property of being termite/borer proof, water/moisture proof and fire retardant and fixed in position with M.S hold fast/lugs/SS dash fasteners of required dia and length complete as per direction of Engineer-In- Charge. (M.S hold fast/lugs or SS dash fasteners shall be paid for separately). Note: For WPC solid door/window frames, minus 5 mm tolerance in dimensions i.e depth and width of profile shall be acceptable. Variation in profile dimensions on plus side shall be acceptable but no extra payment on this account shall be made.				
12.2.1	Frame size 65 x 100 mm	10.00	mtr	495.05	4951
12.3	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid decorative type flush door shutter of required size comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibre (wood powder/ rice husk/wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/cum and screw withdrawal strength of 1800 N (Face) & 900 N (Edge), minimum compressive strength 50 N/mm2, modulus of elasticity 850 N/mm2 and resistance to spread of flame of Class A category with property of being termite/borer proof, water/moisture proof and fire retardant. WPC to be laminated with PVC foil of minimum 14 microns thick of approved design				

	pasted with hot melt adhesive on both faces of shutter and fixing with stainless steel butt hinges of required size with necessary full body threaded star headed counter sunk S.S screws, all as per direction of Engineer-In- Charge. (Note: stainless steel butt hinges and necessary S.S screws shall be paid separately)				
12.3.1	35 mm thick	4.00	Sqm	5432.85	21731
	PART A (Civil Work)			**TOTAL**	**3553406**
	Modified Estimated cost after using correction factor on DSR 2023 on account of GST @ 0.973 (Vide Letter No: 62/SE / (TAS) /PAR/2024/06-H dt: 03.01.2025)	**3553406.41**			3457464
	Cost Index 117% on DSR Items	**3457464**		**TOTAL (A)**	**4045233**

SN.		DESCRIPTION	QTY	UNIT	RATE	AMOUNT
13		**MARKET RATE ITEMS (PART -B)**				
13.1		Providing and Fixing CP Brass sink cock of 15 mm nominal bore for Single-Handle Kitchen sink faucet, cold only in Polished Chrome of approved make.				
13.1.1		Kitchen sink faucet of series Jaquar CON-349 KNM and equivalent	1.00	Each.	2499.65	2500
13.2		Providing and Fixing CP Brass Angle Valve of 15 mm nominal bore in Polished Chrome of approved make.				
13.2.1		Angle Valve of KOHLER series K-25431IN-4-CP or Equivalent	3.00	Each.	1754.25	5264
13.3		Providing and Fixing CP Brass 15mm nominal bore Pillar tap in polished chrome of approved make.				
13.3.1		Pillar Tap of KOHLER series K-34067IN-4-CP or Equivalent	2.00	Each.	2398.35	4797
13.4		Providing and fixing White Vitreous China wash basin including making all connections but excluding the cost of fittings :				
13.4.1		Wash basin of size 550x461x130 mm.				
13.4.1.1		Wash Basin of KOHLER series K-34229IN-0 or equivalent	2.00	Each.	7604.40	15209
13.5		Providing and fixing machine cut machine polished Cuddapah stone slab for horizontal shelves, cooking platform, window sills, soap racks etc., fixed with cement mortar				

		1:3 (1 Cement : 3 coarse sand) including the cost of making necessary grooves in the walls & making good the same after fixing the slabs all complete as directed by the Engineer-in-charge.				
13.5.1		25 mm thick cuddapah stone	12.00	Sqm	1010.45	12125
13.6		Providing and fixing floor trap of self cleansing design with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors : for kitchen sink				
13.6.1		SWR Floor trap=110x90mm	3.00	Each	1643.80	4931
13.7		Providing and Fixing full height Slim Glass double side digitally glazed partition of 12mm toughened glass using Aluminum section of grade 6063-T-6 frame as per drawing. The glasses are to be fixed using slim Profiles at top & bottom & sides. The minimum size profile shall be 40x25mm to be fixed on to the floor/wall/ ceiling as per the Engineer in-Charge design. "I" Junction profile to be used at all Glass to Glass vertical joints, 90 Deg L junction profiles and T Junction profiles necessary as per design to be provided. The profiles shall be suitable for glass thickness of 10/12/13.52mm. The profile shall be matt natural anodized, including all the necessary clips, seals and fixing accessories for the system. weight of profile should not less than 0.60 Kg/meter. All profiles to be with 2 mm thickness excluding 20 micron of anodizing complete as per Architectural requirement & direction of Engineer-in-charge.	101.00	Sqm	10174.43	1027617
13.8		Providing and fixing at all floors and locations H Pull Handle back to back fixing of stainless steel grade SS-304 as per specified shape, design and in combination of glossy and stain / matt / brush steel finish along with the required SS screws, grub screws, connecting studs, spindles, other necessaries etc. all complete as per manufacturer's specifications and as directed by the Engineer-in-charge.				
13.8.1		305 x 25 mm c/c of Hafele or equivalent	10.00	Set	2493.65	24937

13.9		Providing and fixing mortise cylinder deadlock of Hettich, KICH, Hafele or equivalent make for doors, consist of lever handle of Hafele or equivalent, mortice cylinder dead lock of Hafele or equivalent, stainless steel strike plate and forend plate, precision designed and fabricated internal parts, key hole covers of stainless steel in satin/ matt / brush steel finish and pin cylinder of the specified size & shape, along with the necessary stainless steel screws etc. all complete as specified, as per manufacturer's specifications and as directed by the Engineer-in-Charge				
13.9.1		With Euro profile thumb turn cylinder of Hafele or equivalent with one side locking arrangement & other side knob with a set of keys.	2.00	Each	1101.40	2203
13.10		Providing and fixing at all floors and locations A curved latch lock for Glass Door with strike plate, SS Matt of Hettich, KICH, Hafele or equivalent brand including necessary screws etc. complete.				
13.10.1		Curved Latch Lock for Glass Door with strike plates of Hettich, Kich, Hafele or equivalent.	10.00	Each	2986.80	29868
13.11		Providing, supplying and fixing 25 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710 for linear modular workstation table top and vertical end support (gable end), finished with 1.0 mm thick approved decorative laminate machine pressed under hydraulic hot press on all exposed faces and 0.8 mm thick balancing laminate machine pressed on the reverse/concealed faces, with all exposed edges finished with 2 mm thick PVC edge banding fixed using hot-melt EVA adhesive through edge-banding machine, including machine cutting, routing, grooving, edge finishing, necessary cut-outs for 50 mm dia cable grommet, providing and fixing powder-coated metal/PVC cable access flap with brush strip for cable entry, under-table powder-coated MS cable raceway/wire management tray with provision for segregation of power, data and communication cables, 50 mm dia cable grommet, pull-out keyboard tray of approved size complete with heavy-duty telescopic ball-bearing sliding channels, all necessary screws, inserts, cleats, brackets, fasteners, connectors, hardware, adhesives, fixing arrangements, transportation, loading, unloading, fabrication, erection and installation at all heights and levels,	18.51	Sqm	5558.00	102879

		complete as per approved drawings and direction of Engineer-in-Charge. The item shall be measured and paid in square metres of actual area of 25 mm thick plywood fixed in position.				
13.12		Providing & Fixing "Rajashri Brand" factory made Single Exuded WPC (Wood Plastic Composite) louver Panels of 10 to 18 mm thickness and Sizes are 300mm x 2900mm. Panels shall be moisture-resitant, termite proof, Fire-retardant. All joints, Corners and terminations shall be finished with matching WPC trims and accessories. Work includes surface preparation, edge finishing and accessories such corner profiles and cpas adhesive scaffolding and cleaning of surface after installation, complete in all respects as per drawing and direction of the Engineer-in-charge.	80.00	Sqm	2145.65	171652
13.13	MR -13	Providing and laying cement mortar 1:4 (1 cement : 4 coarse sand) as extra mortar for laying vitrified floor tiles, including preparation of surface, mixing, laying, levelling and finishing complete, as per the direction of Engineer-in-Charge.	20.00	Cum	4913.28	98266
13.14	MR -14	Providing and laying waterproofing coating on the sunken portion of the WCs, bathroom on sound and perfectly clean surface, etc. by applying Two-component pre-packed high-flexibility polymer modified cementitious mortar using a roller or brush to the floor area in a two or more coat and all the coats to be applied in right angle to each other. For waterproofing application by trowel or with a roller approximately 1.6 kg. per sqm. per mm of thickness is required to achieve 2 mm of Dry Film Thickness (DFT) over base concrete having moisture content less than 5% on both horizontal and vertical surfaces. Minimum 5 Days curing to be done before laying tiles. The coating shall have following properties :	20.00	Sqm	1107.42	22148
		Providing and laying waterproofing coating on the sunken portion of the WCs, bathroom on sound and perfectly clean surface, etc. by applying Two-component pre-packed high-flexibility polymer modified cementitious mortar using a roller or brush to the floor area in a two or more coat and all the coats to be applied in right angle to each other. For waterproofing application by trowel or with a roller approximately 1.6 kg. per sqm. per mm of thickness is required to				

		achieve 2 mm of Dry Film Thickness (DFT) over base concrete having moisture content less than 5% on both horizontal and vertical surfaces. Minimum 5 Days curing to be done before laying tiles. The coating shall have following properties : 1. Minimum Adhesion to substrate after 28 days 1.0 Mpa, (ASTM D4541) 2. Minimum Crack Bridging Capacity is upto 2.0 mm, (ASTM C1305 modified) 3. Minimum Elongation is 120% (ASTM D 412) The system should include: 1. Cleaning the surface, removing the laitance, and Small cracks up to 5mm needs to be repaired with crack filling material as per manufacturer's specification.				
		2. Angle fillet of 50X50mm need to be prepared with Pre packed Polymer modified mortar as per manufacturer's specification. 3. Pipe penetration up to 120mm dia need to treat with Pre packed Polymer modified mortar of approved make and Pipe penetration in vertical wall – Center part of PVC pipe (Center of width of wall) should be roughened by sandpaper and shall be coated with 2 component epoxy bonding agent followed by micro silica sprinkling on it or fixing of Silica sand topped HDPE tape over roughen surface as per manufacturer's specification. Protection screed over it with required slope is provided which shall be paid separately in 1:2:4, all complete with material labour and machinery needed, as per manufacturers specifications and directions of Engineer-in-charge.The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes Nothing extra shall to be paid.				
		TOTAL OF MARKET RATE ITEMS			**B**	**1524395**
		PART C (FURNITURE WORK)				
14		Double Faced Mobile Unit for Compactor				

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

14.1		Providing and fixing Double Faced Mobile Unit for Compactor 2150mmH x 1830mmW x 900mmD . BASE FRAME : Base Frame shall be fabricated in channel Type from minimum 2.5 mm thick MS Sheet Size of Channel 25mm x 100mm x 45mm. GUIDE RAILS : The guide rails shall be made out of 28mm Bright bar placed on 1.2 mm thick M.S. Plate which will be above the floor and are as per the international standard of safety.	1.00	Each.	119732.00	119732
		SUPER STRUCTURE : Super structure of the Mobile storage system will consist of knock down type panels. All the components such as shelves, front panel, end panel, vertical rear panel, central partition etc. Will act as an integral member of the Unit. SHELVES : Shelves made of 22SWG thick Prime Quality C.R.C.A. having 10 folds each will be provided each designed to carry a U.D.L. of 70 Kilograms. VERTICAL PANEL : Vertical panel consists of the front, Centre & rear panel shall be made out of 20SWG thick C.R.C.A. Prime quality Mild Steel & designed to take the load of shelves. DRIVE COVER PANEL : Made out of 22SWG thick C. R.C. A. prime quality Steel to cover the entire drive mechanism.				
		CENTRE PARTITION : The Centre partition will comprise of a full C.R.C.A. prime quality Mild Steel 22SWG Sheet. LOCKING : System will be provided with individual rack locking as well as centralized locking arrangement on the last unit when all units are brought together, central lock when operated gets locked with the floor & does not allow access to the units.				

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

		DRIVE MECHANISM : Driving Mechanism will be provided externally supported on special grade anti-friction bearing to have smooth & effortless movement. Entire mechanism or gear & sprockets shall be incorporated within the front panel provided in the front of the unit within an area of 1000mm x 200mm x 60mm. DRIVING WHEEL : Fully Powder Coated three pronged drive wheel for better torque & free movement of the rack over the guide rail. INDEXING ARRANGEMENT : Acrylic card holders provided on the front panel for easy identification & retrieval. FINAL FINISH : Powder Coating (8 tanks process with 70 microns)				
15		Single Faced Mobile Unit				
15.1		Providing and fixing Single Faced Mobile Unit for Compactor 2150mmH x 1830mmW x 457mmD - BASE FRAME : Base Frame shall be fabricated in channel Type from minimum 2.5 mm thick MS Sheet Size of Channel 25mm x 100mm x 45mm. GUIDE RAILS : The guide rails shall be made out of 28mm Bright bar placed on 1.2 mm thick M.S. Plate which will be above the floor and are as per the international standard of safety. SUPER STRUCTURE : Super structure of the Mobile storage system will consist of knock down type panels. All the components such as shelves, front panel, end panel, vertical rear panel, central partition etc. Will act as an integral member of the Unit. SHELVES : Shelves made of 22SWG thick Prime Quality C.R.C.A. having 10 folds each will be provided each designed to carry a U.D.L. of 70 Kilograms. VERTICAL PANEL : Vertical panel consists of the front, Centre & rear panel shall be made out of 20SWG thick C.R.C.A. Prime quality Mild Steel & designed to take the load of shelves. DRIVE COVER PANEL : Made out of 22SWG thick C. R.C. A. prime quality Steel to cover the entire drive mechanism.	1.00	Each	63017.00	63017

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

		CENTRE PARTITION : The Centre partition will comprise of a full C.R.C.A. prime quality Mild Steel 22SWG Sheet. LOCKING : System will be provided with individual rack locking as well as centralized locking arrangement on the last unit when all units are brought together, central lock when operated gets locked with the floor & does not allow access to the units. DRIVE MECHANISM : Driving Mechanism will be provided externally supported on special grade anti-friction bearing to have smooth & effortless movement. Entire mechanism or gear & sprockets shall be incorporated within the front panel provided in the front of the unit within an area of 1000mm x 200mm x 60mm. DRIVING WHEEL : Fully Powder Coated three pronged drive wheel for better torque & free movement of the rack over the guide rail. INDEXING ARRANGEMENT : Acrylic card holders provided on the front panel for easy identification & retire.				
16		Single Faced Fixed Unit				
16.1		Providing and fixing Single Faced Fixed Unit for Compactor 2150mmH x 1830mmW x 457mmD Providing and fixing Single Faced Fixed Unit for Compactor 2150mmH x 1830mmW x 457mmD – BASE FRAME : Base Frame shall be fabricated in channel Type from minimum 2.5 mm thick MS Sheet Size of Channel 25mm x 100mm x 45mm. GUIDE RAILS : The guide rails shall be made out of 28mm Bright bar placed on 1.2 mm thick M.S. Plate which will be above the floor and are as per the international standard of safety. SUPER STRUCTURE : Super structure of the Mobile storage system will consist of knock down type panels. All the components such as shelves, front panel, end panel, vertical rear panel, central partition etc. Will act as an integral member of the Unit. SHELVES : Shelves made of 22SWG thick Prime Quality C.R.C.A. having 10 folds each will be provided each designed to carry a U.D.L. of 70 Kilograms. VERTICAL PANEL : Vertical panel consists of the front, Centre & rear panel shall be made out of 20SWG thick C.R.C.A. Prime quality Mild Steel & designed to take the load of shelves.	1.00	Each	57016.00	57016

		DRIVE COVER PANEL : Made out of 22SWG thick C. R.C. A. prime quality Steel to cover the entire drive mechanism.				
		CENTRE PARTITION : The Centre partition will comprise of a full C.R.C.A. prime quality Mild Steel 22SWG Sheet. LOCKING : System will be provided with individual rack locking as well as centralized locking arrangement on the last unit when all units are brought together, central lock when operated gets locked with the floor & does not allow access to the units.				
		DRIVE MECHANISM : Driving Mechanism will be provided externally supported on special grade anti-friction bearing to have smooth & effortless movement. Entire mechanism or gear & sprockets shall be incorporated within the front panel provided in the front of the unit within an area of 1000mm x 200mm x 60mm. DRIVING WHEEL : Fully Powder Coated three pronged drive wheel for better torque & free movement of the rack over the guide rail. INDEXING ARRANGEMENT : Acrylic card holders provided on the front panel for easy identification & retrieval. FINAL FINISH : Powder Coating (8 tanks process with 70 microns)				
17		Providing and fixing in position Personal Locker Unit (PLU) for mobile phone storage (30 user capacity) arranged in 6 rows × 5 columns configuration, at all heights and locations, complete as per approved drawings and direction of Engineer-in-Charge, comprising main unit and add-on units arranged to form a complete locker bank, including all materials, hardware, fittings, accessories, labour, transportation and installation, as per following specifications:	1.00	Unit	95575.00	95575.00
		A. Configuration & Capacity Locker unit designed for 30 individual compartments Arrangement: 6 rows × 5 columns Modular system consisting of main unit and add-on units with common side panels				
		B. Locker Size: Individual locker size (nominal): 200 mm (W) × 450 mm (D) × 300 mm (H)				

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

		C. Overall Locker Bank Size The overall size of locker bank shall be approximately: Width-5 lockers × 200 = 1000 mm Side panels (18 mm × 2) = 36 mm Total Width = 1036 mm (≈ 1040 mm)				
		Height 6 lockers × 300 = 1800 mm Horizontal members (5 × 18 mm) = 90 mm Top & bottom panels = 36 mm Skirting = 75 mm Total Height = 2001 mm (≈ 2000 mm)				
		Depth Locker depth = 450 mm Back panel + clearance = 10–15 mm Total Depth = 460–465 mm (≈ 460 mm)				
		D. Material & Construction Locker body made from Cold Rolled Close Annealed (CRCA) Mild Steel sheet Thickness:-0.8 mm to 1.0 mm Construction:- Knock-down modular construction & Structure shall be:- Rigid, level and plumb and Free from distortions and sharp edges.				
		E. Door & Locking System Individual doors with: Snap-fit ABS handle with label holder Locking:-10 lever cam lock with individual key, Provision for hasp arrangement				
		F. Internal Load Capacity Minimum 35 kg uniformly distributed load per locker				
		G. Base & Leveling Skirting height: 50–75 mm Adjustable levelers provided				
		H. Finish Pre-treatment (anti-rust) Epoxy polyester powder coating (min. 50 microns)				
		I. Accessories & Fixing All fasteners, fittings, stiffeners Fixing to wall/floor if required Complete in all respects				
		Unit: Per Locker Unit (30 Compartments Complete Set)				
		"Overall dimensions are approximate and shall be verified as per approved layout and manufacturer's design." (1 Unit comprises of 30 No's mobile locker)				
18		Laptop Locker Unit				

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

18.1		Providing and fixing Laptop Locker Unit for 6 laptops, fabricated from CRCA steel sheet, suitable for safe and secure storage of laptops along with laptop bags/cases and one file folder (optional), complete in all respects as per approved specifications and direction of Engineer-in-Charge.	1.00	Each.	50093.00	50093.00
		The locker unit shall be of overall size 900 mm (W) × 500 mm (D) × 1850 mm (H) (approx.) and shall consist of 6 individual compartments arranged vertically, each having minimum clear internal size of 850 mm (W) × 450 mm (D) × 250 mm (H), suitable for accommodating standard laptop with carry bag and documents.				
		The body, top, bottom, sides, back and internal shelves shall be fabricated from prime quality CRCA steel sheet of minimum 0.8 mm thickness, and doors shall be made from CRCA steel sheet of minimum 0.9 mm thickness, reinforced with stiffeners to ensure rigidity and durability. The unit shall be of knock-down or welded construction as per approved design. Each locker compartment shall be provided with: I) Individual hinged door with ventilation slots/perforations for heat dissipation II) Individual locking arrangement with cam lock, each lock supplied with minimum three (3) keys III) Provision for numbering/name plate IV) Protective base lining (EVA/rubber/felt) to prevent damage to stored items The locker system shall be designed for independent operation of each compartment, ensuring security and ease of access.				
		The unit shall be provided with a recessed plinth/base of minimum 75 mm height and 50 mm inset from front, fabricated from CRCA steel sheet, enclosing the support system and providing clear separation between bottom of unit and finished floor for protection against dust and moisture ingress. The unit shall be supported on adjustable screw type levelers concealed within the plinth for proper leveling on uneven floor and shall be rigidly anchored to floor and/or wall using suitable anchor fasteners/bolts to ensure stability and prevent overturning.				
		All steel components shall undergo 8-tank anti-rust pre-treatment process including degreasing, derusting, phosphating, etc.,				

		followed by electrostatic epoxy polyester powder coating of minimum 50 microns dry film thickness in approved shade and finish. The item shall include all necessary hardware, fittings, hinges, locks, fasteners, anchor bolts, accessories, and assembly, including placing in position at all levels, complete in all respects. All materials shall be of approved make and quality, and the work shall be executed complete in all respects as per approved drawings and direction of Engineer-in-Charge.				
19		INAGURATION BOARD				
		Providing and fixing at all floors and locations INAGURATION BOARD as per indicative image - material grade (e.g., 304 stainless steel), shape (rectangular or square), finish (matt or high gloss), and manufacturing process (laser cutting, engraving, or printing). - SIZE :900 (L) x 450 (H) etc complete as per Direction of Engineer -in-charge.	1.00	Each	7424.00	7424
20		120 DEGREE WORKSTATION-3 WAY CLUSTER				
		Providing and fixing in position 120° modular workstation (3-way cluster) comprising three user seats arranged at 120-degree configuration, complete with worktop, under structure (gable ends), modesty panels, partition system, wire management system, keyboard trays and all associated accessories, at all heights and locations, as per approved layout drawings and direction of Engineer-in-Charge, consisting of the following:	5.00	Unit	131988.00	659940
		A. Worksurface Providing and fixing three numbers worksurfaces, each of size 1500 mm × 1500 mm × 600 mm depth (120° configuration), made of:- i) 25 mm thick calibrated BWP grade plywood conforming to IS 710. Finished with:- ii) 1.0 mm thick high pressure laminate on top surface (IS: 2046) , iii) 0.8 mm balancing laminate on bottom surface iv) 2 mm thick PVC edge banding on all exposed edges using hot melt EVA adhesive with automatic edge banding machine Including:- v) Access flap (minimum 450 mm × 150 mm) with brush strip vi) 50 mm dia cable grommet (PVC/metal) vii) Necessary shaping, machining and				

		edge finishing for 120° geometry Complete.				
		B. Key board Tray Providing and fixing keyboard tray for each seat, made of laminated board mounted on powder coated MS telescopic sliding channels, ensuring smooth sliding operation, complete with all fittings.				
		C. Understructure / Gable End Panels Providing and fixing gable end panels (vertical supports) made of: i) 18 mm thick calibrated BWP grade plywood conforming to IS 710 Finished with:- a) 1.0 mm laminate on both sides b) 2 mm PVC edge banding on exposed edges Including:- c) Structural support cleats, brackets and fixing system d) Integration with partition framework e) Adjustable screw type levellers Complete.				
		D. Modesty Panel Providing and fixing modesty panels below worksurface, made of: i) 18 mm thick calibrated BWP grade plywood conforming to IS 710 Finished with:-a) Laminate on both sides b) 2 mm PVC edge banding Including proper fixing to gable ends / partition and ergonomic positioning, complete.				
		E. Partition System (120° 'Y' Configuration) Providing and fixing 63 mm thick, 1200 mm high modular partition system, forming central 120° ('Y' type) spine with side panels, made of extruded aluminum sections (6063-T6), comprising:- • Uprights and 120° ('Y' junction posts (min. 1.6 mm thick) • Horizontal members, trims, panel frames (min. 1.2 mm thick) • Grooved uprights for fixing worktop and accessories • Adjustable levellers (±10 mm) • Epoxy polyester powder coating (minimum 50 microns DFT) Structure shall be rigid, aligned, level and plumb.				
		F. Panel Composition (Above Worktop) I) White Board Panels Providing panels made of: • 8 mm thick calibrated BWP grade plywood (IS 710) • Finished with 0.6 mm white laminate (front) and backing laminate				

		II) Pin-up / Tackable Panels Providing panels made of:-• 8 mm insulation board • Upholstered with Grade-III fabric (fire retardant as per NFPA 701) • Fixed using spray adhesive Complete.				
		G. Wire Management System Providing and fixing integrated raceway system made of 0.9 mm thick CRCA MS sheet (Grade D as per IS: 513), including: i) Separate compartments for electrical, LAN and telephone ii) Horizontal & vertical cable routing iii) Raceway at skirting / below / above worksurface iv) Modular switch plate cut-outs (8M / 2M) v) Vertical cable riser through partition uprights vi) Interconnection through central spine (Electrical fittings, wiring, switches, data cables etc. shall be measured and paid separately.)				
		H. Supports, Junctions & Accessories Providing and fixing: • 120° ('Y'), 'L', 'T' and '+' junction posts • Worktop support brackets, cleats and fixing hardware • PVC caps, trims and end covers • Grooved uprights for fixing gable panels and accessories •Adjustable screw type levellers Complete.				
		I. Surface Treatment All metal components shall undergo: • Eight tank anti-rust pre-treatment • Degreasing, derusting, phosphating • Electrostatic epoxy polyester powder coating • Minimum 50 microns DFT, complete				
		J. Hardware & Completion Including: i) Screws, fasteners, inserts, cleats, anchor fasteners. ii) Assembly components and connectors iii) Transportation, loading/unloading iv) Installation and placing in position Complete in all respects as per approved drawings. (Set of 03 work station is considered as one Unit)				
21		4-way modular workstation cluster in '+' configuration				
22		P/F/Supplying "T" configuration (2-Seater Modular Workstation – 'T' Configuration)				

		Providing and fixing in position 2-seater modular linear workstation in 'T' configuration, comprising two users sharing a common central partition spine with one perpendicular partition, at all heights and locations, complete as per approved layout, drawings and direction of Engineer-in-Charge, consisting of the following:	3.00	Unit	105784.00	317352
		A. Worksurface (2 Nos.) Providing and fixing two numbers worksurfaces, each of size 1750 mm (L) × 600 mm (D) × 750 mm (H), made of 25 mm thick calibrated BWP grade plywood, finished with: i)1.0 mm thick high pressure laminate on top surface ii) 0.8 mm laminate on bottom surface , iii) 2 mm thick PVC edge banding on all exposed edges using hot melt EVA adhesive with automatic edge banding machine Including:- a)50 mm dia cable grommets (PVC/metal) b)Access flap (metal/PVC with brush strip) for cable routing c) Under-table cable tray/basket (powder coated MS). Providing and fixing keyboard tray of minimum size 550 mm × 300 mm, made of pre-laminated board / engineered polymer, mounted on heavy-duty telescopic powder-coated MS channels with smooth sliding arrangement, complete as required.				
		B. Modesty Panel Providing and fixing modesty panels below worksurface, made of 18 mm thick pre-laminated board / plywood with laminate finish, fixed to supports/framework, complete. C. Gable End Panels (End Supports) Providing and fixing gable end panels (vertical side supports) made of 18 mm thick pre-laminated board / plywood with laminate finish, including necessary supports, fittings and adjustable screw type levellers, complete.				
		D. Common Partition System ('T' Configuration) Providing and fixing 63 mm thick, 1200 mm high modular partition system, forming a 'T' configuration (one main spine + one perpendicular partition), made of extruded aluminium sections conforming to 6063-T6, comprising: i)Uprights, end posts and 'T' junction posts (min. 1.6 mm thickness) ii) Horizontal members, trims, panel dividers and frames (min. 1.2 mm thickness)				

		ii)Framework finished with epoxy polyester powder coating (50–60 microns DFT). iii)Structure complete with press-fit trims, true to line, level and in plumb. iv) Panel Composition (Above Worksurface) a)White board panels:- 8 mm thick ply with 0.6 mm white laminate and backing laminate b)Pin-up / tackable panels:-8 mm thick insulation board upholstered with fabric using adhesive . Fabric shall be : Grade-III, fire retardant (NFPA 701 or equivalent)				
		F. Supports, Junctions & Accessories Providing: i)'T' junction post, end posts and necessary connectors ii)Powder coated MS worktop support brackets / cleats iii)Full-length grooves in uprights for fixing worktop and accessories iv)PVC caps, trims and end covers v)Adjustable screw type levellers , Including provision of: vi)Keyboard tray (where specified) made of laminated board with MS telescopic channels Complete.				
		G. Surface Treatment All metal components shall undergo:- i)Eight tank anti-rust pre-treatment ii)Degreasing, derusting, phosphating iii)Electrostatic epoxy polyester powder coating Minimum 50 microns DFT, complete. H. Hardware & Completion The item includes: i)Screws, fasteners, inserts, cleats, anchor fasteners ii)Assembly hardware and connectors iii)Transportation, loading/unloading iv)Installation and placing in position etc Complete in all respects. (Set of 02 work station is considered as one Unit).				
23		PEDESTAL UNIT.				
		Providing and fixing in position free standing pedestal unit (3 drawer type – 2 box + 1 file drawer) for T-shaped , 4- way Cluster and 120° modular workstations, at all heights and locations, complete as per approved drawings and direction of Engineer-in-Charge, consisting of the following:	29.00	Each	16013.00	464377.00
		A. Overall Size •400 mm (W) × 450 mm (D) × 620 mm (H) (±10 mm tolerance) B. Carcass / Body Construction Providing pedestal carcass made of:				

		i)18 mm thick calibrated BWP grade plywood conforming to IS 710 Finished with: ii)1.0 mm laminate on all external visible faces (IS: 2046) iii)0.8 mm balancing laminate on internal faces (where required) iv)2 mm PVC edge banding on all exposed edges using hot melt EVA adhesive (machine applied) Including: v)6 mm thick BWP plywood back panel (IS 710), fixed with screws/adhesive vi)Internal partitions (if any) in 12 mm / 18 mm calibrated plywood etc Complete.				
		C. Drawer Configuration (3 Nos.) Providing and fixing three drawers comprising: (i) Box Drawers (2 Nos.) •Internal clear size (each): approx. 300–320 mm (W) × 380 mm (D) × 80–100 mm (H) •Suitable for stationery items (ii) File Drawer (1 No.) •Internal clear size: approx. 300–320 mm (W) × 380 mm (D) × 220–250 mm (H) •Suitable for A4 / foolscap file storage with hanging provision D. Drawer Construction i)Drawer sides/back: 12 mm thick calibrated BWP plywood (IS 710) ii)Drawer bottom: 6 mm thick BWP plywood (IS 710) iii)Drawer fronts: 18 mm thick calibrated BWP plywood with 1.0 mm laminate finish. All edges finished with PVC edge banding (1–2 mm), etc complete.				
		E. Drawer Mechanism Providing:i) Telescopic ball bearing drawer slides (SS/MS powder coated) or metal box (metabox) system, as approved ii)Minimum 45 kg load capacity for file drawer iii)Smooth, noise-free sliding operation etc Complete. F. Handle / Pulling Arrangement •Handle-less design (clean finish) •Drawer operation through side tapered finger recess groove provided behind drawer front Complete.				
		G. Locking System Providing: •Central locking system with actuator & lock channel mechanism				

		•10 lever cam lock with keys (minimum 2 keys per unit) •Locking arrangement shall simultaneously lock all drawers Complete. H. Base & Mobility Providing: •Nylon / PVC glide feet or castors (optional as specified) •Anti-skid base support •Provision for easy movement (if castors provided) etc Complete. I. Metal Components & Finish All metal components (slides, channels, lock body, fittings) shall be: • Epoxy polyester powder coated •Minimum 40–50 microns DFT etc Complete. J. Hardware & Completion Including: •Screws, fasteners, hinges (if any), fittings •Adhesives, cleats, connectors • Transportation, loading/unloading • Installation and placing in position etc Complete in all respects.				
		"The pedestal unit shall be mobile type and provided with minimum four heavy-duty twin-wheel nylon castors, two of which shall be fitted with locking mechanism, or alternatively mounted on adjustable levellers as specified in the approved furniture layout."				
24		Executive Table	1.00	Each	213509.00	213509.00
		(Premium Executive Desk with Return & Detached Drawer Unit – Knockdown Type) Providing, manufacturing, supplying and fixing in position premium executive suite desk (Prime type) consisting of main desk, extended return unit and detached drawer pedestal, at all heights and locations, complete as per approved drawings, indicative image and direction of Engineer-in-Charge, comprising the following:				
		Providing, manufacturing, supplying and fixing in position main desk of size 2100 mm (L) × 1200 mm (W) × 750 mm (H), fabricated from calibrated BWP Grade Marine Plywood conforming to IS:710, complete as per approved drawings and direction of the Engineer-in-Charge. The desk shall be provided with a 60 mm thick built-up table top comprising layered calibrated BWP grade plywood with necessary internal framing to ensure structural rigidity and dimensional				

		stability. The top surface shall be factory finished with 1.0 mm thick approved decorative high-pressure laminate conforming to IS:2046, while the underside shall be finished with 0.8 mm thick balancing laminate. All exposed edges shall be machine finished with solid hardwood lipping or 2 mm thick PVC edge banding, as approved, using hot-melt EVA adhesive through automatic edge banding machine. The work surface shall incorporate an inset soft leather writing pad with decorative metal inlay strip, providing a smooth, elegant and durable writing surface. The desk shall also be provided with an integrated wire management system comprising a minimum 450 mm × 150 mm powder-coated metal/PVC cable access flap with brush strip, 50 mm diameter PVC/metal cable grommet, and concealed cable routing arrangement for power, data and communication cables. The item shall include all necessary machining, cut-outs, fittings, hardware, connectors, screws, inserts, cleats, brackets, fasteners, transportation, loading, unloading, assembly, installation and placing in position, complete in all respects as per approved drawings and the directions of the Engineer-in-Charge.				
		B. Base / Supporting Structure Providing and fixing base/supporting structure for the executive desk fabricated from 18 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710, forming the side panels, modesty support panels and structural members, complete as per approved drawings and direction of the Engineer-in-Charge. The supporting structure shall comprise rigid frame construction integrated with the return unit using suitable structural cleats, brackets, connectors and fixing arrangements to ensure adequate strength, stability and load carrying capacity. The complete assembly shall be provided with concealed M8 adjustable screw type levellers for proper alignment and levelling on uneven floor surfaces. The item shall include all necessary machining, fabrication, hardware, fasteners, inserts, fixing accessories and installation complete in all respects.				

		C. Extended Return Unit Providing, manufacturing, supplying and fixing in position extended return unit of size 2100 mm (L) × 550 mm (D) × 750 mm (H) (same height as the main desk), fabricated from calibrated BWP Grade Marine Plywood conforming to IS:710, complete as per approved drawings and direction of the Engineer-in-Charge. The external exposed surfaces shall be factory finished with 1.0 mm thick approved decorative laminate conforming to IS:2046, while all internal surfaces shall be finished with 0.8 mm thick balancing laminate. All exposed edges shall be machine finished with 2 mm thick PVC edge banding fixed using hot-melt EVA adhesive through automatic edge banding machine. The return unit shall incorporate enclosed storage comprising cupboards with soft closing shutter doors, complete with approved quality stainless steel/powder coated soft closing hinges, adjustable internal shelves and all necessary hardware and fittings. The unit shall also be provided with concealed wire management arrangement for routing of power, data and communication cables from the main desk to the return unit. The item shall include all necessary connectors, cleats, screws, inserts, fasteners, machining, fabrication, transportation, assembly, installation and placing in position complete in all respects.				
		D. Detached Drawer Unit (Pedestal – 3 Drawer) Providing, manufacturing, supplying and fixing in position detached pedestal drawer unit of size 450 mm (W) × 450 mm (D) × 700 mm (H) fabricated from calibrated BWP Grade Marine Plywood conforming to IS:710, complete as per approved drawings and direction of the Engineer-in-Charge. The external faces shall be finished with 1.0 mm thick approved decorative laminate, while all internal faces shall be finished with 0.8 mm thick balancing laminate. All exposed edges shall be machine finished with 2 mm thick PVC edge banding using hot-melt EVA adhesive through automatic edge banding machine. The pedestal shall consist of three drawers comprising two box drawers and one file drawer, complete with drawer boxes made from 12 mm thick plywood and 6 mm thick plywood bottom panels. Each drawer shall be mounted on approved				

		quality heavy-duty soft closing telescopic ball bearing drawer slides, and the pedestal shall be provided with central locking arrangement operating all drawers simultaneously. The drawer fronts shall be of handle-less recessed pull design or approved equivalent. The item shall include all necessary hardware, connectors, screws, fasteners, locking system, assembly, transportation, installation and placing in position complete in all respects.				
		E. Modesty Panel Providing and fixing modesty panel below the main desk fabricated from 18 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710, finished on both sides with approved decorative laminate, complete with machine finished edges, necessary structural supports, cleats, brackets, connectors and fixing arrangements, rigidly fixed to the desk supporting structure, complete as per approved drawings and direction of the Engineer-in-Charge.				
		F. Hardware & Fittings Providing and fixing all necessary hardware and fittings for the complete executive desk system including soft closing hinges for shutters, heavy-duty telescopic drawer slides, central locking mechanism, connectors, cleats, brackets, inserts, screws, anchor fasteners and all other approved hardware required for complete installation. All fittings shall be suitable for knock-down (KD) construction, of approved make and quality, and shall ensure smooth, silent and durable operation. The item shall include all fixing accessories, adjustments and testing complete in all respects.				
		G. Surface Treatment & Finish All wooden components shall be factory finished with approved decorative laminates of specified thickness and shade, free from bubbles, wrinkles, scratches or visible defects. All exposed edges shall be machine finished with 2 mm thick PVC edge banding or approved solid hardwood lipping as specified. All metallic fittings, brackets and accessories shall undergo suitable anti-corrosion treatment and shall be finished with electrostatic epoxy polyester powder coating of minimum 40–50 microns dry film thickness, wherever applicable, complete as per manufacturer's				

		specifications.				
		H. Installation & Completion The item shall include transportation from factory to site, loading, unloading, handling, shifting to all floor levels, knock-down assembly, installation, alignment, levelling, adjustment, cleaning and placing in position complete as per approved drawings and direction of the Engineer-in-Charge. The rates shall also include all labour, tools and plants, consumables, hardware, fixing accessories, protection of finished surfaces during installation and making good of minor damages, if any, complete in all respects to the satisfaction of the Engineer-in-Charge.				
25		OFFICE EXECUTIVE TABLE				
		Providing and fixing in position Office Executive Table for Level–11 Officer of approved design, shade, pattern and finish, complete as per approved drawings and direction of the Engineer-in-Charge. The executive table shall comprise main desk, side return unit, front modesty panel, attached pedestal drawer unit, integrated cable management system, power box and all necessary hardware and accessories, complete in all respects. The overall configuration shall consist of Main Desk of size 1800 mm (L) × 900 mm (D) × 750 mm (H) and Side Return Unit of size 1000 mm (L) × 400 mm (D) × 750 mm (H), fabricated from 25 mm thick calibrated BWP/BWR Grade plywood conforming to IS:710/IS:303, as specified, finished with 1.0 mm thick approved decorative high pressure laminate conforming to IS:2046 on all exposed surfaces and 0.8 mm thick balancing laminate on concealed/internal faces. All exposed edges shall be machine finished with 2 mm thick PVC edge banding fixed using hot-melt EVA adhesive through automatic edge banding machine.	2.00	Each	132958.00	265916.00
		The main desk shall be provided with 25 mm thick calibrated plywood table top properly supported over side panels and pedestal unit, designed to withstand normal office loading conditions and complete with all necessary machining, routing, grooves, cut-outs and provisions for electrical, communication and data management. The desk shall also be provided with a front modesty panel of 725 mm height fabricated from 18 mm thick calibrated plywood, finished with				

		approved laminate on exposed surfaces and balancing laminate on concealed surfaces, complete with 2 mm thick PVC edge banding on exposed edges and rigidly fixed below the table top using approved cleats, connectors and hardware.				
		The side return unit shall be fabricated from 25 mm thick calibrated plywood and shall be finished with approved decorative laminate and PVC edge banding as specified. The return unit shall incorporate enclosed storage with openable shutter complete with approved quality soft closing stainless steel/powder coated hinges, magnetic catcher, locking arrangement, sleek type handles, adjustable shelves and all necessary fittings, complete. The executive table shall further be provided with an attached pedestal drawer unit of 400 mm width comprising three drawers (2 box drawers and 1 file drawer) fabricated from calibrated plywood, with drawer fronts finished in approved decorative laminate and exposed edges protected with 2 mm thick PVC edge banding. The drawer boxes shall be mounted on heavy-duty full extension soft closing telescopic ball-bearing drawer channels of approved make, and the file drawer shall be suitable for suspension file storage. The pedestal shall be provided with central locking arrangement for all drawers complete with lock, duplicate keys and sleek anodized aluminum/stainless steel finish handles.				
		The table shall be provided with an integrated cable management system comprising soft closing cable access flap recessed within the table top, complete with modular power box suitable for power, LAN, HDMI, USB charging and other communication requirements, including all necessary cut-outs, cable routing arrangement, cable grommets, fixing accessories and concealed wire management provisions. (Electrical wiring, switches, sockets and active networking components shall be measured and paid separately unless otherwise specified.)				
		All exposed edges of plywood members shall be machine finished with 2 mm thick PVC edge banding using hot-melt EVA adhesive through automatic edge banding machine, while internal edges, wherever required, shall be provided with matching PVC lipping. All laminate finished				

		surfaces shall be smooth, level, true to line and free from scratches, dents, bubbles, open joints or other visible defects. The colour, texture and finish of laminate shall be approved by the Engineer-in-Charge before manufacture.				
		Including all approved quality hardware, fittings and accessories such as soft closing hinges, heavy-duty telescopic drawer slides, central locking system with duplicate keys, magnetic catchers, handles, connectors, brackets, cleats, screws, inserts, fasteners, PVC buffers, adjustable levelling feet, cable management accessories, adhesives, assembly hardware and all other incidental materials necessary for complete fabrication, assembly, installation and satisfactory performance of the furniture. The rate shall also include transportation, loading, unloading, handling, shifting to all floor levels, assembly, installation, alignment, levelling, testing, cleaning and placing in position complete in all respects as per approved drawings and direction of the Engineer-in-Charge.				
26		STORAGE CABINET / CREDENZA / BACK UNIT				
		Providing and fixing in position Low Height Storage Cabinet/Credenza/Back Unit of approved design, shade, pattern and finish, of overall size 900 mm (L) × 400 mm (D) × 750 mm (H), at all floor levels and locations, complete as per approved drawings and direction of the Engineer-in-Charge. The storage unit shall comprise carcass, top, side panels, bottom panel, intermediate shelves, vertical partitions, shutters and/or drawer units, locking arrangement, skirting, hardware fittings and all necessary accessories complete in all respects. The carcass, top, side panels, bottom panels, intermediate shelves, vertical partitions and front facia shall be fabricated from 18 mm thick calibrated BWP/BWR grade plywood conforming to IS:710/IS:303, as specified, finished with 1.0 mm thick approved decorative high pressure laminate conforming to IS:2046 on all exposed external surfaces and 0.8 mm thick balancing laminate on concealed/internal surfaces. All exposed edges shall be machine finished with 2 mm thick PVC edge banding fixed using hot-melt EVA adhesive through automatic through-feed	3.00	Each	63471.00	190413.00

		edge banding machine to produce smooth, uniform edges free from visible joints, chips or glue marks.				
		The storage unit shall be provided with a 9 mm thick plywood back panel securely fixed to the carcass using approved screws and adhesive, finished with laminate on the exposed face wherever visible. The storage arrangement shall comprise drawers and/or shutter storage as indicated in the approved drawings, with drawer fronts and shutter panels fabricated from 18 mm thick calibrated plywood finished with approved decorative laminate and PVC edge banding. The drawers shall be mounted on heavy-duty full extension telescopic drawer slides of approved make to ensure smooth and silent operation, while shutters shall be fitted with approved quality soft closing hinges. The storage unit shall be provided with suitable internal shelves for storage of office files, documents and materials, complete with approved locking arrangement, duplicate keys and all necessary accessories.				
		The storage unit shall be provided with 60 mm high recessed skirting/plinth on the front and rear sides and concealed M6 adjustable screw type levelling feet for proper alignment and levelling on uneven floor surfaces. Including all approved quality hardware, fittings and accessories such as soft closing hinges, heavy-duty telescopic drawer channels, locks with duplicate keys, handles, minifix fittings, dowel pins, connectors, brackets, magnetic catchers (where required), screws, inserts, fasteners and all other accessories suitable for knock-down (KD) construction, of approved make such as Hettich, Hafele, Ebco or equivalent. All laminate finished surfaces shall be smooth, level, properly aligned and free from scratches, dents, bubbles, waviness or other visible defects. The completed storage unit shall be rigid, stable and suitable for continuous office use. The item shall also include all necessary machining, machine cutting, routing, grooving, drilling, edge finishing, cut-outs, fabrication, approved adhesives, transportation, loading, unloading, handling, shifting to all floor levels, assembly, erection, installation, alignment, levelling, adjustment, cleaning and placing in position, complete in all respects as per the approved drawings and directions of				

		the Engineer-in-Charge. The quoted rate shall be deemed to include all incidental materials, hardware, fittings and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible on this account unless specifically provided for elsewhere in the Schedule of Quantities.				
27		OVAL SHAPE CONFERENCE TABLE (19 SEATER)				
		Providing and fixing in position Modular Oval Shape Conference Table (19 Seater) of approved design, shade, pattern and finish at all floor levels and locations, complete as per approved drawings and direction of the Engineer-in-Charge. The conference table shall be of overall size 6150 mm (L) × 2000 mm (W) × 750 mm (H) and shall comprise modular table units including 08 Nos. main table modules of size 1350 mm (L) × 600 mm (D) × 750 mm (H), 01 No. central connecting module of size 600 mm × 600 mm × 750 mm, and 02 Nos. corner modules of size 750 mm × 750 mm × 750 mm, assembled together to form a continuous oval-shaped conference table with smoothly radiused end profiles, complete as per approved layout, drawings and direction of the Engineer-in-Charge. The table top shall be fabricated from 38 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710, finished with 1.0 mm thick approved decorative high-pressure laminate conforming to IS:2046 on the top surface and 0.8 mm thick balancing laminate on the underside. All exposed edges shall be machine finished with 2 mm thick PVC edge banding fixed using hot-melt EVA adhesive through automatic edge banding machine. The finished table top shall be smooth, level, rigid and free from dents, scratches, bubbles, waviness and visible joints. The supporting framework shall comprise 25 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710 forming gable end panels, intermediate support panels and structural members, finished with approved decorative laminate on exposed surfaces and balancing laminate on concealed surfaces, complete with rigid structural support system, metal threaded inserts, connectors, cleats, brackets and all necessary fixing arrangements to ensure adequate strength,	1.00	Each	367333.00	367333.00

		stability and durability under normal office loading conditions. The table shall be provided with 18 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710 modesty panels, laminate finished on both sides with 2 mm thick PVC edge banding on exposed edges and securely fixed to the supporting framework extending up to floor level. The conference table shall be provided with a fully concealed wire management system comprising 02 Nos. anodized aluminum flip-up cable access flaps with soft closing mechanism, concealed cable raceway/tray fabricated from 2 mm thick CRCA mild steel sheet of minimum size 400 mm × 120 mm, finished with electrostatic epoxy polyester powder coating of 70–80 microns dry film thickness, complete with concealed cable routing arrangement, provision for installation of modular power, LAN, HDMI, USB charging and telephone sockets, vertical cable riser through supporting leg with removable access cover, cable separator for segregation of power and data cables and power pole for vertical routing of cables through junction box, including all necessary cut-outs, supports, brackets, fittings and fixing accessories. (Electrical wiring, modular switches, sockets, power modules and active networking components shall be measured and paid separately unless otherwise specified.)				
		All exposed plywood edges shall be machine finished with 2 mm thick PVC edge banding, while concealed surfaces shall be finished with 0.8 mm thick balancing laminate. All laminate finished surfaces shall be smooth, level, properly aligned and free from scratches, dents, bubbles and visible joints. Including all approved quality hardware and fittings such as metal threaded inserts, connectors, cleats, brackets, screws, fasteners, levelling accessories, cable management fittings and all other fixing hardware necessary for complete assembly, of approved make. The item shall also include all necessary machining, machine cutting, routing, grooving, drilling, edge finishing, fabrication, approved adhesives, transportation, loading, unloading, handling, shifting to all floor levels, assembly, installation, alignment,				

		levelling, adjustment, finishing, cleaning and placing in position, complete in all respects as per approved drawings and directions of the Engineer-in-Charge.				
		The product supplied shall conform to the approved sample and the approved technical specifications. Tolerance up to ±10% in furniture dimensions shall be permissible, unless otherwise specified in the approved drawings.				
		The quoted rate shall be deemed to include all materials, hardware, fittings, accessories, consumables and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible on account of any item or operation required for completing the work unless specifically provided for elsewhere in the Schedule of Quantities.				
28		SIDE TABLE FOR CONFERENCE HALL (Glass Top Corner Table)				
		Providing and fixing in position Glass Top Corner Table of approved design, pattern and finish at all floor levels and locations, complete as per approved drawings and direction of the Engineer-in-Charge. The table shall be of overall size 600 mm (W) × 600 mm (D) × 450 mm (H), comprising 12 mm thick black tinted toughened safety glass top conforming to relevant IS standards with thickness tolerance of ±0.3 mm, having machine polished edges and smooth glossy finish, securely fixed to the supporting frame by means of UV bonded adhesive, stainless steel bushes/spacers and all necessary fixing accessories, complete. The supporting framework shall be fabricated from Stainless Steel Grade SS-304 tubular/solid sections, comprising rigid welded construction with members fabricated from 12 mm diameter stainless steel rod/tube conforming to IS:1762, including all necessary cutting, bending, welding, grinding, polishing and finishing to achieve a true, rigid and stable structure. All exposed stainless steel surfaces shall be machine polished in approved matt/gloss finish, free from dents, waviness, sharp edges, welding marks or other visible defects. Including all approved quality hardware, fittings and accessories such as stainless steel bushes, UV adhesive, connectors, fixing brackets, cleats, screws, fasteners and all other necessary fixing hardware	1.00	Each	14752.00	14752

		required for complete assembly and installation. The item shall also include transportation, loading, unloading, handling of glass, shifting to all floor levels, assembly, fixing in position, alignment, levelling, cleaning and finishing, complete in all respects as per approved drawings and directions of the Engineer-in-Charge.				
		The product supplied shall conform to the approved sample and technical specifications. Tolerance up to ±10% in the furniture dimensions shall be permissible, unless otherwise specified in the approved drawings. The quoted rate shall be deemed to include all materials, hardware, fittings, accessories, consumables and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible on account of any item or operation required for completing the work unless specifically provided for elsewhere in the Schedule of Quantities.				
29		TEA / COFFEE TABLE				
		Providing, manufacturing, supplying, transporting and fixing in position Round Tea/Coffee Table (4 Seater) of approved design, shade, pattern and finish at all floor levels and locations, complete as per approved drawings and direction of the Engineer-in-Charge. The table shall be of overall size 900 mm diameter × 750 mm height, comprising circular table top, metallic understructure, supporting framework, levelling arrangement and all necessary hardware and accessories complete. The table top shall be fabricated from 25 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710, finished with 1.0 mm thick approved decorative high-pressure laminate conforming to IS:2046 on the top surface and 0.8 mm thick balancing laminate on the underside. All exposed edges shall be machine finished with 2 mm thick PVC edge banding fixed using hot-melt EVA adhesive through automatic edge banding machine. The laminate finish shall be of approved shade, pattern and texture with smooth, level and properly aligned surfaces free from scratches, dents, bubbles and visible joints. The supporting under structure shall comprise MS ERW tubular pole base	3.00	Each	25670.00	77010

		assembly consisting of a 75 mm diameter × 1.6 mm thick central MS ERW tube supported on a three-prong MS base arrangement with top support framework comprising three MS 'U' brackets securely welded to the central tube for fixing the table top. The complete metallic framework shall include all necessary cutting, bending, welding, grinding, finishing, structural supports, connectors, cleats, brackets, self-tapping screws, inserts, fasteners and fixing hardware required for rigid and stable construction. The table shall be provided with height adjustable screw type levelling feet for proper alignment on uneven floor surfaces. All mild steel components shall undergo eight-tank anti-corrosion pre-treatment including degreasing, derusting and phosphating, followed by electrostatic epoxy polyester powder coating of minimum 50 microns dry film thickness, oven baked as per manufacturer's specifications. The finished table shall be rigid, stable and suitable for continuous office use. Including all necessary machining, machine cutting, routing, drilling, edge finishing, fabrication, approved adhesives, transportation, loading, unloading, handling, shifting to all floor levels, assembly, installation, alignment, levelling, finishing, cleaning and placing in position, complete in all respects as per approved drawings and directions of the Engineer-in-Charge. The quoted rate shall be deemed to include all materials, hardware, fittings, accessories and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible on account of any item or operation required for completing the work unless specifically provided for elsewhere in the Schedule of Quantities.				

		The product supplied shall conform to the approved sample and approved technical specifications. Tolerance up to ±10% in furniture dimensions shall be permissible, unless otherwise specified in the approved drawings.The quoted rate shall be deemed to include all materials, hardware, fittings, accessories, consumables and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible on account of any item or operation required for completing the work unless specifically provided for elsewhere in the Schedule of Quantities.				
30		OFFICE HIGH BACK REVOLVING CHAIR				
		Providing and placing in position High Back Executive Chair with Headrest, ergonomically designed and manufactured using high-density moulded PU foam upholstered in leatherette fabric over moulded plywood shell for seat, back and integrated headrest, complete with contoured lumbar support. The chair shall be provided with PU-padded armrests mounted on polished aluminium supports with leatherette-finished arm caps, synchronized tilting mechanism having 360° swivel, reclining function with tilt tension adjustment and multi-position locking arrangement, Class-4 gas lift mechanism suitable for seat height adjustment, polished die-cast aluminium pedestal base with 60 mm dia twin-wheel nylon castors, and all exposed metallic components finished in chrome/polished finish. The chair shall be suitable for user load up to 150 kg and shall be BIFMA tested and certified. Overall size of chair shall be approximately 640 mm (W) × 690 mm (D) × 1160–1220 mm (H) with seat size approximately 500 mm (W) × 470 mm (D) and seat height adjustable from 470 mm to 530 mm. The item shall include all hardware, fittings, accessories, assembly and installation complete at site as per approved sample and directions of Engineer-in-Charge.	1.00	Each	43187.00	43187
31		OFFICE HIGH BACK REVOLVING CHAIR				

31.1		Providing and Placing High Back Revolving Chair of approved make and model at all floor levels and locations, suitable for office use, complete as per approved shade, design, specifications and direction of Engineer-in-Charge, comprising ergonomically designed seat and back assembly with synchronized tilting mechanism, pneumatic height adjustment and adjustable armrests, complete with all fittings and accessories, consisting of the following:	2.00	Each	24457.00	48914
32		MEDIUM BACK REVOLVING CHAIR (FOR WORK STATIONS)	29.00	Each	12422.00	360238
		Providing and placing in position Medium Back Ergonomic Revolving Chair of approved make, model, shade and finish, suitable for workstation and office use, complete as per approved sample, specifications and directions of the Engineer-in-Charge. The chair shall have an overall height of approximately 950–1020 mm, overall width 450–500 mm, seat size approximately 480–510 mm (W) × 480–510 mm (D) and medium backrest of 550–600 mm height and 450–470 mm width. The backrest shall be ergonomically designed and manufactured from glass fibre reinforced engineering polypropylene, upholstered with breathable mesh fabric and provided with integrated lumbar support for optimum seating comfort. The seat shall be manufactured from glass fibre reinforced engineering polypropylene, fitted with high-density moulded polyurethane (PU) foam of density 50–55 kg/m³ and upholstered with approved fabric, securely mounted on a reinforced load-bearing seat structure. The chair shall be provided with 2D adjustable armrests fitted with soft PU arm pads, synchro tilt mechanism with multi-position locking and tilt tension adjustment, 360° swivel mechanism, Class-IV pneumatic hydraulic gas lift providing seat height adjustment of 90–100 mm, and heavy-duty five-prong reinforced nylon pedestal base fitted with five twin-wheel nylon castors suitable for smooth movement on finished flooring. All plastic components shall be manufactured from high-quality engineering polymer and all exposed metallic components shall be finished with approved powder coating or chrome finish,				

		as applicable.				
		Including all approved quality hardware, fittings and accessories required for complete assembly, including gas lift, tilt mechanism, armrest assemblies, castors, pedestal base, fasteners, moulded covers and all other incidental components. The item shall also include transportation, loading, unloading, handling, assembly, testing and placing in position, complete in all respects as per approved sample and directions of the Engineer-in-Charge.				
		The quoted rate shall be deemed to include all materials, hardware, fittings, accessories, consumables and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible unless specifically provided for elsewhere in the Schedule of Quantities.				
33		MESH LOW BACK REVOLVING CHAIR / VISITOR CHAIR				
		Providing and placing in position Premium Medium Back Ergonomic Revolving Chair of approved make, model, shade and finish at all floor levels and locations, suitable for executive workstation and office use, complete as per approved sample, specifications and directions of the Engineer-in-Charge. The chair shall be ergonomically designed with an overall height of 950–970 mm, overall width of 450–500 mm, seat size approximately 480–510 mm (W) × 480–510 mm (D) and medium backrest of 620–650 mm height and 450–500 mm width. The backrest shall be manufactured from glass fibre reinforced engineering polypropylene upholstered with breathable mesh fabric and provided with adjustable lumbar support for optimum ergonomic comfort. The seat shall be manufactured from glass fibre reinforced engineering polypropylene, fitted with high-density moulded polyurethane (PU) foam of density 50–55 kg/m³, upholstered in approved premium fabric and securely fixed to a reinforced load-bearing seat structure.	10.00	Each	21836.00	218360
		The chair shall be provided with 4D adjustable armrests fitted with soft PU arm pads, automatic weight-responsive synchro tilt mechanism with multi-position locking, tilt tension adjustment, integrated seat slider for forward seat depth adjustment, 360° swivel mechanism,				

		Class-IV pneumatic hydraulic gas lift providing seat height adjustment of 90–100 mm, and heavy-duty polished aluminium five-prong pedestal base fitted with five twin-wheel nylon castors suitable for smooth movement on finished flooring. All plastic components shall be manufactured from high-quality engineering polymer and exposed metallic components shall have polished or premium finish as applicable.				
		Including all approved quality hardware, fittings and accessories such as Class-IV gas lift, synchro tilt mechanism, seat slider, armrest assemblies, pedestal base, castors, moulded covers, screws, fasteners and all other incidental components required for complete assembly. The item shall also include transportation, loading, unloading, handling, assembly, testing, placing in position and cleaning, complete in all respects as per approved drawings and directions of the Engineer-in-Charge.				
		The product supplied shall conform to the approved sample and approved technical specifications. Tolerance up to ±10% in the furniture dimensions shall be permissible, unless otherwise specified in the approved drawings. The quoted rate shall be deemed to include all materials, hardware, fittings, accessories, consumables and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible unless specifically provided for elsewhere in the Schedule of Quantities.				
34		GLASS WRITING BOARD FOR BRAINSTORMING				
		Providing and fixing in position Glass Writing Board/Magnetic Discussion Board of approved make, size, shade and finish at all floor levels and locations, complete as per approved drawings and directions of the Engineer-in-Charge. The board shall be fabricated from 10 mm thick toughened safety glass conforming to relevant IS standards, having machined polished smooth edges and back-painted magnetic writable surface of approved colour, suitable for writing with dry-erase markers and repeated cleaning without staining, ghosting or surface deterioration. The glass board shall be provided with a smooth, glossy, non-porous writing surface, compatible with magnetic accessories for office, conference room and brainstorming				

		applications.				
		The board shall be securely fixed to the wall using stainless steel decorative mounting studs/spacers, complete with nylon bushes, sleeves, concealed anchoring arrangement and all necessary fixing accessories to ensure rigid and safe installation. Including all approved hardware, fittings, transportation, loading, unloading, handling, alignment, installation, cleaning and placing in position, complete in all respects as per approved drawings and directions of the Engineer-in-Charge. The quoted rate shall be deemed to include all materials, hardware, fittings, accessories and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible unless specifically provided for elsewhere in the Schedule of Quantities.				
34.1		Glass Board for brainstorming Size: 1800 mm × 1800 mm)	1.00	Each	31444.00	31444
34.2		Glass Board for brainstorming (size 2400mm x 1500mm)	1.00	Each	34938.00	34938
35		DISPLAY CABINET / TV WALL PANELING UNIT (Decorative Wall Panelling for LED TV Display – Without Storage)	1.00	Each	74243.00	74243
		Providing and fixing in position Decorative TV Wall Panel Unit of approved design, shade and finish at all floor levels and locations, complete as per approved drawings and directions of the Engineer-in-Charge. The unit shall be of overall size 1400 mm (L) × 1900 mm (H) and shall comprise a structural framework of seasoned treated hardwood battens of suitable size securely fixed to the wall with approved anchor fasteners, screws, cleats and fixing accessories. The decorative wall panelling shall be fabricated from 18 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710, finished with 1.0 mm thick approved decorative high-pressure laminate conforming to IS:2046 on exposed surfaces and 0.8 mm thick balancing laminate on concealed surfaces. All exposed edges shall be machine finished with 2 mm thick PVC edge banding fixed using hot-melt EVA adhesive through automatic edge banding machine to produce smooth, uniform and durable edges.				

		The unit shall be provided with suitable provision for mounting LED TV up to 75-inch size, including concealed cable management system, service access, cut-outs and provisions for routing of power, HDMI, LAN, audio-video and other communication cables, complete with all necessary supports and fixing arrangements. (LED TV, TV mounting bracket, electrical wiring, switches, sockets and active electronic equipment shall be measured and paid separately unless otherwise specified.)				
		The completed wall panel unit shall have smooth, level and properly aligned laminate finished surfaces, free from scratches, dents, bubbles, waviness and visible joints, and shall be rigid, true to line and level. Including all necessary machining, machine cutting, routing, grooving, drilling, edge finishing, fabrication, approved adhesives, hardware, connectors, cleats, screws, inserts, fasteners, transportation, loading, unloading, handling, shifting to all floor levels, assembly, installation, alignment, levelling, finishing, cleaning and placing in position, complete in all respects as per approved drawings and directions of the Engineer-in-Charge.				
		Providing, manufacturing, supplying and fixing in position Decorative TV Wall Panel Unit of approved design, shade and finish at all floor levels and locations, complete as per approved drawings and directions of the Engineer-in-Charge. The unit shall be of overall size 1400 mm (L) × 1900 mm (H) and shall comprise a structural framework of seasoned treated hardwood battens of suitable size securely fixed to the wall with approved anchor fasteners, screws, cleats and fixing accessories. The decorative wall panelling shall be fabricated from 18 mm thick calibrated BWP Grade Marine Plywood conforming to IS:710, finished with 1.0 mm thick approved decorative high-pressure laminate conforming to IS:2046 on exposed surfaces and 0.8 mm thick balancing laminate on concealed surfaces. All exposed edges shall be machine finished with 2 mm thick PVC edge banding fixed using hot-melt EVA adhesive through automatic edge banding machine to produce smooth, uniform and durable edges.				

		The unit shall be provided with suitable provision for mounting LED TV up to 75-inch size, including concealed cable management system, service access, cut-outs and provisions for routing of power, HDMI, LAN, audio-video and other communication cables, complete with all necessary supports and fixing arrangements. (LED TV, TV mounting bracket, electrical wiring, switches, sockets and active electronic equipment shall be measured and paid separately unless otherwise specified.)				
		The completed wall panel unit shall have smooth, level and properly aligned laminate finished surfaces, free from scratches, dents, bubbles, waviness and visible joints, and shall be rigid, true to line and level. Including all necessary machining, machine cutting, routing, grooving, drilling, edge finishing, fabrication, approved adhesives, hardware, connectors, cleats, screws, inserts, fasteners, transportation, loading, unloading, handling, shifting to all floor levels, assembly, installation, alignment, levelling, finishing, cleaning and placing in position, complete in all respects as per approved drawings and directions of the Engineer-in-Charge.				
		The product supplied shall conform to the approved sample and approved technical specifications. Tolerance up to ±10% in the overall dimensions shall be permissible, unless otherwise specified in the approved drawings.The quoted rate shall be deemed to include all materials, hardware, fittings, accessories, consumables and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible unless specifically provided for elsewhere in the Schedule of Quantities.				
36		CAFETERIA CHAIR				
		Providing and placing in position Café/Dining Chair (Armless Type) of approved make, model, shade and finish at all floor levels and locations, suitable for cafeteria, dining, breakout, discussion and collaborative spaces, complete as per approved sample, specifications and directions of the Engineer-in-Charge. The chair shall be of overall size 480–500 mm (W) × 480–500 mm (D) × 780–800 mm (H) with seat height of 420–450 mm, ergonomically designed for comfortable	12.00	Each	9511.00	114132

		seating and manufactured from heavy-duty injection moulded polypropylene (PP) using UV-stabilized engineering polymer with organic pigments, providing a scratch-resistant, weather-resistant and colour-fast finish. The chair shall comprise a single-piece ergonomically contoured shell with integrated seat and backrest of approved colour, designed to provide high impact resistance and a minimum vertical load carrying capacity of 300 kg. The supporting base shall comprise reinforced injection moulded polypropylene legs complete with EPDM floor protectors/bushes to prevent damage to finished flooring and ensure stable seating. Including all approved quality hardware, fittings, moulded inserts, connectors, fasteners and all other accessories necessary for complete assembly, together with transportation, loading, unloading, handling, placing in position and cleaning, complete in all respects as per approved sample and directions of the Engineer-in-Charge.				
		The product supplied shall conform to the approved sample and approved technical specifications. Tolerance up to ±10% in furniture dimensions shall be permissible, unless otherwise specified in the approved drawings.The quoted rate shall be deemed to include all materials, hardware, fittings, accessories, consumables and operations necessary for satisfactory completion of the work, and no extra payment shall be admissible unless specifically provided for elsewhere in the Schedule of Quantities.				
37		METALLIC HOME LOCKER	1.00	Each	31881.00	31881
		Providing, supplying, transporting and fixing in position Premium Digital Electronic Safe Locker of approved make and model having minimum 30 litres internal storage capacity, suitable for secure storage of cash, confidential documents, digital media, valuables and personal belongings, complete as per approved sample, manufacturer's specifications and directions of the Engineer-in-Charge. The safe locker shall be of double-wall reinforced construction, fabricated from heavy-duty CRCA steel, with machine-pressed and continuously welded body, reinforced anti-pry door, concealed heavy-duty hinges and rigid construction. The body shall be fabricated				

		from minimum 2.0 mm thick CRCA steel sheet, while the door shall be fabricated from minimum 6 mm thick steel plate or equivalent reinforced construction, complete with precision-engineered locking arrangement.				
		The locker shall be provided with a microprocessor-controlled digital electronic locking system comprising programmable numeric keypad, motorized locking mechanism, password reset facility, emergency override key with duplicate keys, low battery warning indication, tamper-resistant operation, automatic locking function and internal battery compartment with external emergency power provision, complete. The locking system shall operate through solid steel locking bolts engaging on multiple sides of the door for enhanced security.				
		The locker shall be provided with adjustable internal shelf(s), soft protective carpet lining, LED internal illumination (where provided by the manufacturer), document storage compartment and all standard accessories supplied by the OEM. The exterior shall receive suitable anti-corrosion pre-treatment followed by electrostatic epoxy polyester powder coating of approved shade and finish, resistant to scratches and corrosion.				
		The unit shall be suitable for wall and floor anchoring, complete with high-strength anchor fasteners, fixing bolts, drilling template and all necessary fixing accessories recommended by the manufacturer.				
		Including all approved quality hardware, electronic keypad, override keys, locking bolts, battery compartment, anchor fasteners, screws, fittings and accessories together with transportation, loading, unloading, handling, shifting, fixing in position, testing, commissioning, demonstration of operation and handing over, complete in all respects as per approved drawings and directions of the Engineer-in-Charge.				
		The manufacturer/OEM shall possess valid ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 certifications or equivalent applicable certifications. The product supplied shall conform to the approved sample and manufacturer's technical specifications. Tolerance up to ±10% in				

		overall dimensions shall be permissible, unless otherwise specified in the approved drawings.				
		The quoted rate shall be deemed to include all materials, hardware, electronic locking system, fittings, accessories, batteries supplied by the manufacturer, anchor fasteners and all operations necessary for satisfactory completion of the work, and no extra payment shall be admissible unless specifically provided for elsewhere in the Schedule of Quantities.				
38		METAL ALMIRAH FOR ADMIN ROOM				
		Providing, transporting and placing at all floors and locations a metallic almirah Storage Unit Gather of Godrej/Durian/Rock worth or equivalent of size 915 (L)x 485(D) x 1980(H)mm Height with welded construction. It should have three way bolting mechanism. All steel components should undergo eight tank anti rust treatment and oven baked epoxy polyester powder coated with 50-60 dry film thickness. The CRCA steel sheet used for the body is of 20 SWG / guage, as per IS-513 1994. It has height wise adjustable 4 shelves made of 22 SWG / guage CRCA steel sheet and shall have a Uniformly Distributed Load Capacity of max 40 Kg. . It has six lever Mazak Zinc Plated durable Lock. It has scratch hardness of 3 Kgs as BS-3900 part E2 1970, IS-101. It should have six lever Mazak Zinc Plated Godrej or equivalent Lock. Store well Shall have 2 nos.of individual legs in welded construction made of 1mm thick galvanised steel of height 125mm and finished in powder coating. All complete as per Standard design and dimensions.	4.00	Each	28630.00	114520
		Cross Members-Cross Members are made from 50mm X 25mm X 1.2mm thick ERW tube (as per IS:7138). These are coated with 50 micron epoxy polyester coating. Cross Members are assembled by friction fit PDC joinery and grub screws. There are always two cross members for one table. Access Flap-Soft closing access flap is used. Provision for standard size of 8 modules electrical shall be provided. Access flap is made from Aluminium extrusion, PDC parts made from Aluminium Alloy and plastic parts are				

		made from Nylon 6 and wire brush with nylon bristles. Power Box-Power box made with 0.8 mm thick CRCA (IS: 513), for 8 module to be provided.				
39		SHOE POLISH MACHINE				
		Providing and Fixing at all floors and locations SHOE POLISH MACHINE as per indicative image comprises of Stainless Steel / Wooden Shoe Shine Machine With Sole Cleaner, Size: 510mm X 320mm X 425mm Operation: Fully Automatic Material: Stainless Steel / Wood Voltage: 220V / 50Hz Rotational Speed : 1200RPM.	1.00	Each	19653.00	19653.00
		PART A = 40,45,233/- PART B = 15,24,395/- PART C = 40,54,969/-	TOTAL FURNITURE ITEMS (C)			4054969
		TOTAL (A+B+C)	9624597			
		SAY				**96,24,597/-**

Executive Engineer And Senior Manager (C)-II,
MPC-II,CPWD, Mumbai-37.

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

PART - D

ELECTRICAL (E &M) Works

PROFORMA OF SCHEDULES (E & M WORKS : MINOR COMPONENT)

(Separate Performa for Civil, Electrical & Horticultural Works in case of Composite Tenders)
(Operative Schedules to be supplied separately to each intending tenderer)

SCHEDULE 'A'		
Schedule of quantities -	:	For Electrical Component: At the end of Part D
SCHEDULE 'D'		
Extra schedule for specific requirements/ document for the work, if any	:	NIL
SCHEDULE 'E'		
Reference to General Conditions of contract	:	As per part 'A' of NIT.
PROFORMA OF SCHEDULES	CPWD	

NAME OF WORK: -

Interior Furniture work , Internal flooring, partition, false ceiling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

Package 1

Estimated cost of work (E & M Works)		:	₹77,58,891/-
(i)	Earnest Money	:	As per part 'A' of NIT
(ii)	Performance Guarantee	:	As per part 'A' of NIT
(iii)	Security Deposit	:	As per part 'A' of NIT

SCHEDULE 'F"

GENERAL RULES &DIRECTIONS:	
Officer inviting tender	Executive Engineer& SM (C)- II, MPC-II, CPWD, Mumbai
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:	Defined under Clause 12 hereinafter.
Definitions:	
2(v) Engineer-in-Charge	For Electrical works – Executive Engineer & SM (E&M), MPC-II, CPWD, Mumbai or his successor there of
2(viii) Accepting Authority	As per part 'A' of NIT
2(x) Percentage on cost of materials and labor to cover all overheads and profits:	15%
2(xi) Standard Schedule of Rates	D.S.R. 2025 with correction slips issued up to

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

	previous day of last date of submission of bid + MR
2(xii) Department	Central Public Works Department.
9(ii) Standard CPWD Contract Form	CPWD form 7 of General conditions of contracts 2023 for Maintenance Work modified & corrected up to previous day of the last date of submission of Bid.
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 part 'A' of NIT
(ii) Maximum allowable extension with late fee at 0.1% per day of performance guarantee amount beyond the period provided in (i) above	As per part 'A' of NIT
Clause 2	
Authority for fixing compensation under clause 2	As per part 'A' of NIT
Clause 5	
Number of days from the date of issue of letter of acceptance for reckoning date of start	As per part 'A' of NIT
Schedule of rate of recovery for delay in submission in Time, Progress Chart & Progress report. (Per Day)	As per part 'A' of NIT

Mile Stone Table (Electrical):			
Sr. No.	Description of Milestone (Physical Progress)	Period for Completion from date of start in months	Amount to be withheld in case of non-achievement of mile stone
	As Per Part 'A' of NIT		

Authority to decide:

(i) Authority to convey the decision of shifting of milestone and Extension of time : As per part 'A' of NIT

(ii) Authority to decide rescheduling of milestone and extension of time : As per part 'A' of NIT

(iii) Authority to decide Shifting of date of start in case of delay in handing over of site : As per part 'A' of NIT

Clause 6,

Clause applicable - (6) : As per part 'A' of NIT

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

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. 20, 00, 000/- However, bill of lesser amount may be paid with mutual consent after approval of Engineer-in-Charge to facilitate progress of work.

Clause 7 A

Whether Clause 7 A shall be applicable	:	Yes, Applicable

Clause 8A

Authority to decide compensation on account of if contractor fails to submit completion plan.	:	Engineer-in-Charge.

Clause 10A

List of testing equipment to be provided By the contractor at site lab	:	HT & LT Meger, Lux meter, Earth Tester, Tong Tester, Thermometer, Anemometer, Vernier caliper.

Clause 10B (ii)

Whether Clause 10 B (ii) shall be applicable	:	As per Part 'A'
Clause 10C	:	As per Part 'A'
Component of labour expressed as percent of value of work	:	15%
Clause 10CA	:	Not applicable

Sr. No.	Material covered under this clause	Nearest Materials (other than cement, reinforcement bars and the structural steel) for which All India Wholesale Price Index to be followed	Base price and its corresponding period of all materials covered under clause 10 CA *
		--- Nil ---	

Clause 10 CC	:	As per part 'A' of NIT
Schedule of component of other Materials, Labour, POL etc. for price escalation	:	(For Electrical or E&M works)
Component of Electrical construction Materials expressed as percentage of total value of Electrical and E&M work.	:	85%
Component of Labour expressed as percentage of total value of Electrical and E&M work	:	15%

Clause 11

Specifications to be followed for execution of work	:	CPWD General Specification for electrical work Part-I Internal – 2023, Part-II External-2023, Part III Lifts and Escalators–2003 Part IV Sub-station– 2013, Part V Wet-riser & Sprinkler Systems – 2020, Part – VI Fire Detection & Alarm System – 2018, Part VII D.G. Sets – 2013, Heating, Ventilation & Air-Conditioning(HVAC) – 2024 All the publications as amended up to previous day of last date of submission of

bid.

Building information model(BlM) is applicable and BIM professional to be deployed by contractor	:	As per Part 'A' of NIT
Clause 12		
Clause 12.2. & 12.3		
Deviation Limit beyond which clauses12.2 & 12.3 Shall apply	:	As per part 'A' of NIT
Clause 12.5		
(i) Deviation Limit beyond which Clause - 12.2 & 12.3 shall apply for Foundation Work. (Except Earth Work).	:	As per part 'A' of NIT
Deviation Limit for items in earth work subhead of DSR or related items.	:	As per part 'A' of NIT
Clause 16		
Competent Authority for deciding reduced rates	:	As per part 'A' of NIT
Clause 18		
List of mandatory machinery tools & plants to be deployed by the contractor at site.	:	Bench vice, conduit bending machine and any other equipment as per requirement of work.
Clause 19C	:	As per part 'A' of NIT
Clause 19D	:	As per part 'A' of NIT
Clause 19G	:	As per part 'A' of NIT
Clause 19K	:	As per part 'A' of NIT
Clause 25	:	As per part 'A' of NIT

Clause 32

Sl. No.	Minimum Qualification of Technical Representative	Discipline	Designation (Principal Technical / Technical Representative)	Minimum Experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 32 (i)	
						Figures (in Rs. Per Month)	Words Per Month
As per Part A of the tender							

NOTE

Engineer(s) and/ or overseer(s) deployed as per stipulation in the contact shall look afteronly the work under contract and no other work and shall be available fully during execution of work.

Even if contractor (or partner in case of firm/ company) is himself an engineer/ overseer, it is necessary on part of contractor to employ Engineer(s)/ overseer for the supervision of the work(s) as per stipulation.

Executive Engineer/Assistant Engineers retired from Government services that are holding Diploma will be treated at par with Graduate Engineers. Diploma holder with minimum 10-year relevant experience with a reputed construction co. can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holders should not exceed 50% of requirement of degree engineers

Clause 38 : As per Part – A of NIT

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

RECOVERY RATES FOR QUANTITIES BEYOND PERMISSIBLE VARIATION

Sl. No	Description of Item	Rates in figures and words at which recovery shall be made from the Contractor.	
		Excess beyond permissible variation	Less use beyond the permissible variation
---NIL---			

CHAPTER: 1- General Information for Electrical Works
Note: Electrical work or E &M works have been interchangeably used. They mean the same thing.
Name of work: Interior Furniture work , Internal flooring, partition, false ceiling including electrical work, HVAC,CCTV, Audio, Video, Fire Alarm etc for5th floor IITBRP Building, Mumbai
Structure of the tender document:
The E&M works have been sub-divided in to following packages.

Package: (C1) SH I- Internal EI
Package: (C2) SH II- UPS System
Package: (C3) SH III- LAN , EPABX System
Package: (C4) SH IV- HVAC System
Package: (C5) SH V- AV System
Package: (C6) SH VI - Safety Officer , Fire NOC & OC

Package C1 to C6

In the work for at Interior Furniture work , Internal flooring, partition, false ceiling including electrical work, HVAC,CCTV, Audio, Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai. CPWD intends to provide E&M services and civil works, through this tender. This E&M works comprising of packages C1 to C6 deals with Electrical and Mechanical Services as below.

Package C1: Internal EI, - This package covers wiring in Furniture for light points/ power points including conducting for TV / Telephone/ELV system, & light fixtures, MCB distribution boards, Sub main wiring to Distribution boards, Floor trunking with earthing including other system, Estimated cost: Rs. 9,16,091/-

Package C2: UPS System: The scope of work includes Supplying, Installation, Testing and Commissioning of providing 1 Nos. 20 KVA Modular type UPS system with battery for emergency power backup to the office area with necessary wiring etc as required. Estimated cost: Rs. 3,41,772/-

Package C3: LAN , EPABX System - The scope of work includes Installation, testing & commissioning of existing EPABX System for officers area, etc. Estimated cost: Rs. 8,92,480/-

Package C4: HVAC System: Scope of work includes providing SITC of AHU & ducting connection with existing water cooled chiller System and allied accessories along within door and indoor units, necessary copper and drain piping, Etc. Estimated cost: Rs. 32,53,777/-

Package C5: AV System– The scope of work includes SITC of Interactive display, HDMI extender TX & RX as per requirements. Estimated cost: Rs. 15,56,504/-

Package: (C6) Safety Officer , Fire NOC & OC - The scope of work includes Safety Officer , Fire NOC & OC as per requirements. Estimated cost: Rs. 7,98,267/-

CHAPTER: 2 - GENERAL CONDITIONS FOR ALL E&M PACKAGES

2.1 Mode of Submission of Tenders.
2.1.1 The tender documents as called for the tender for all the Sub Heads of Civil and E&M works shall be submitted together to the Executive Engineer, before the date stipulated for opening of tenders.
2.2.1 The tenderer is advised not to leave blank or write irrelevant information in the schedules. In event no rate has been quoted for any item(s), leaving space both in figure(s), word(s) and amount blank, it will be presumed that the contractor has included the cost of this/ those item(s) in other items and rate for such items will be considered as "zero" and work will be required to be executed accordingly.
2.3 The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the tender and the tenderers shall be bound to perform the same at the rate quoted. In such case, the Department also reserves the right to award the balance part of the tender and/ or any other contracts to other agencies at the sole discretion of the Department. The decision of the Department in this regard shall be final and binding on the contractor and no claim of whatsoever nature shall be entertained from the contractor on this account.
2.4 The Contractor shall assume all liability, financial or otherwise in connection with his 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 reason whatsoever and shall himself defend all actions arising from such claims and shall keep the department saved harmless and indemnified in all respect from such actions, costs and expenses. Nothing extra shall be payable on this account.
2.5 Before commencing the work, the Contractor shall, without in any way limiting his obligations and liabilities, insure at his own cost and expense against any damage or loss or injury, which may be caused to any person or property. Nothing extra shall be payable on this account.
2.6 Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids. The department shall not bear 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 document have been furnished in good faith and 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 and no claim, whatsoever, shall be entertained from the Contractor, if the data or information furnished in tender document is different from data/ drawing for actual construction issued after the award of work or in-correct otherwise. It is presumed that the Contractor has satisfied himself for all possible contingencies, situations, bottlenecks and acts of coordination, which may be required between different agencies.
2.7 INCIDENTAL CHARGES: All incidental charges of any kind including cartage, storage, wastage and safe custody of material etc. shall be borne by the Contractor and no claim whatsoever shall be entertained on this account.
2.8 QUALITY ASSURANCE:
The Contractor shall make available, on request from the Department, for record, copies of challans, cash memos, receipts and other certificates, if any, vouchers towards the quantity and quality of various materials procured and the same shall be kept in record. These shall also provide information on the name of the manufacturer, manufacturer's product identification, manufacturer's instructions, warning, date of manufacturing and test certificates from manufacturers for the product for each consignment delivered at site, shelf life, if any, for the department toensure that the material have been procured from the approved source and of the approved quality, as directed by the Engineer-in-Charge. Day to day account of receipt of such material shall be maintained at site of work and shall be regulated by the department. Nothing extra shall be payable on this account.

2.9 STORAGE OF MATERIALS:
Storage and safe custody of all materials shall be the sole responsibility of the Contractor. Nothing extra shall be payable on this account. Contractor has to make his own arrangement for the same

2.10 QUALITY CONTROL AND TESTING OF MATERIALS:

2.10.1 All the material to be used on works shall bear ISI certification mark unless otherwise the make is specified in the item or special conditions appended with this tender document. In case ISI mark material or the materials mentioned in the tender documents are not available, the opinion of Engineer-in-charge, which shall be final and binding, the material to be used shall conform to CPWD specifications applicable in this tender or IS Code. In such cases Engineer-in-charge shall satisfy himself about the quality or such material and give his approval in writing. Only articles classified as first quality by the manufacturers shall be used unless otherwise specified. All material not having ISI mark shall be tested as per relevant ISI specification. The Engineer in charge may relax the condition regarding testing if the quantity of the materials required for the work is small. In all cases of use of ISI marked materials proper proof of procurement of materials from authentic manufacturers shall be provided by the contractor to the entire satisfaction of Engineer-in-charge. All materials equivalent to the one specified should be got approved by the Engineer-in-charge before using the said materials in the work.

2.10.2 If the department desires to send any samples of materials for testing in an accredited laboratory, the Contractor at his own expense shall supply all materials, labour for preparing and testing samples as required by the Engineer-in-Charge. The testing shall be carried out in the presence of the representative of the Engineer- in- Charge. The testing charges shall be borne by the contractor. If the results show that the samples do not satisfy the relevant specification, then the defective material shall be taken out from the site and rectifications in work shall be carried out by the contractor without any claim of cost.

2.11 No foreign exchange shall be made available by the department for importing (purchase) of equipment's, plants, machinery, materials of any kind. No delay and no claim of any kind shall be entertained from the Contractor on account of variation in the foreign exchange rate and/or any Custom duties / charges or any other levies.

2.12 COORDINATION WITH OTHER AGENCIES

The Contractor shall carry out his work so as not to interfere with or hinder the progress or completion of the work being performed by other Contractors or by the Engineer in charge and shall as far as possible arrange his work and shall place and dispose off the materials being used or removed so as not to interfere with the operations of other Contractors or shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the complete satisfaction of others.

2.13 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 thecontract.

2.14 The tenderers shall take into account the element of wastage(s) those are likely to be there in all elements of the work and quote his price, taking that into account. The tenderers shall study all the items from the point of view of wastage(s), which are likely to take place.

2.15 Electric Power Supply and Water Supply

It is the responsibility of the contractor to arrange required power supply and water supply for installation and testing purposes during the contract period. Nothing extra shall be paid on this account.

CHAPTER – 3 : ADDITIONAL CONDITIONS (GENERAL) FOR ALL E&MPACKAGES

Unless otherwise specified following specifications shall be followed for the E & M works:

i) CPWD General Specifications for Electrical Works Part I Internal – 2023, amended upto date.
ii) CPWD General Specifications for Electrical Works Part II External – 2023, amended upto date.
iii) CPWD General Specifications for Electrical Works Part III Lifts and Escalators–2003, amended upto date.
iv) CPWD General Specifications for Electrical Works Part IV Sub-station– 2013, amended upto date.
v) CPWD General Specifications for Electrical Works Part V Wet-riser &SprinklerSystems – 2020, amended upto date.
vi) CPWD General Specifications for Electrical Works Part VI Fire Detection & Alarm System – 2018, amended upto date.
vii) CPWD General Specifications for Electrical Works Part VII DG Set – 2013, amended upto date.
viii) CPWD General Specifications for Heating, Ventilation& Air-Conditioning (HVAC) - 2024 amended upto date.
ix) Any additional item of work, if taken up subsequently, shall also confirm to the relevant CPWD specifications mentioned above.

3.2 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) Particular Specification and Special Condition, if any
iii) Additional conditions
iv) Drawings
v) CPWD Specifications.
vi) Indian Standard Specifications of B.I.S.

3.3 Taxes and duties
i) The work shall be treated on indivisible works contract basis and the rates tendered shall be for complete items of works inclusive of all taxes, duties, and levies etc. and all charges for items contingent to the work, such as packing, forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site i/c temporary constructional storage, risk, overhead charges, general liabilities/ obligations etc.
ii) The rates quoted by the agency are inclusive of all taxes and duties. Nothing extra shall be paid on this account.
iii) All Statutory deductions as applicable rates will be made from the Contractors bill.

3.4 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. The site is available for work. The contractor shall, immediately on issue of letter of acceptance of tender, make arrangements for starting the work.

3.5 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 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.

3.6 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.

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

3.8 INTEGRATED PROGRAMME CHART

The Contractor shall prepare and submit to the Engineer-in-charge, an integrated programme chart. The integrated programme chart submitted by the contractor shall not have any discrepancy with the financial milestones attached in the contract agreement. The contractor shall execute the work according to the programme submitted to and approved by the Engineer-in-Charge.

3.9 INTEGRATED SERVICE DRAWINGS

Before taking up the work, the contractor shall prepare shop drawings for all E&M services, integrated drawings for various civil and electrical works showing details of lay out plan including sectional elevations and submit the same for the approval of Engineer- in-Charge. 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.

3.10 PROCEDURE FOR APPROVAL OF MATERIALS, SHOP FLOOR DRAWINGS ANDCOMMENCEMENT OF WORK

Within prescribed time period as per the mile stone the contractor shall visit the site and submit following documents for approval
List of makes & Model numbers of all items of equipment and accessories for Packages C1 to C6.
Catalogues of the equipment to be supplied. Along with design details, technical specification, safety certifications etc. as required for each product.
iii) Shop floor drawings of each package shall be submitted separately for approval. It is the responsibility of the tenderer to get the makes, models and shop floor drawings approved by the department. The makes and models offered should be as per the specification and BOQ of the NIT. The decision of Engineer–in–charge is final in this regard. The materials can be brought to site only after the due approval of drawings, makes, models from the department.

3.11 SUPERVISION OF WORK:
The Contractor shall depute Site Engineers & skilled workers as required for the work. He shall submit organization chart along with details of Engineers and supervisory staff. It shall be ensured that all

decision-making powers shall be available to the representatives of the Contractor at site (IIT BRP Building, Mumbai) itself to avoid any likely delays on this account. The Contractor shall also furnish list of persons for specialized works to be executed for various items of work. The Contractor shall identify and deploy key persons having qualifications and experience in the similar and other major works, as per the field of their expertise. If during the course of execution of work, the Engineer-in-Charge is of the opinion that the deployed staff is not sufficient or not well experienced; the Contractor shall deploy more staff or better-experienced staff at site to complete the work with quality and in stipulated time limit.

3.12 SPECIALISED AGENCIES:

The main Contractor has to associate approved specialized agencies for the E&M components Packages C1 to C5, as listed in "information and instructions for contractors for e- Tendering" of NIT .
The contractor shall ensure that the all the specialized agencies under him shall fulfil all the conditions of previous clause (Supervision of work) for the entire period of the contract. **No payment shall be made unless, for civil as well as E& M work component, unless the main contractor finalize the specialised agency for E & M work.**

3.13 PROTECTIVE / SAFETY MEASURES:
Necessary protective and safety equipment shall be provided to the Site Engineer, workers & Supervisory staff by the Contractor at his own cost for use at site.

3.14 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.

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

3.16 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.

3.17 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 labourer 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.

3.18 SUBMISSION OF AS BUILT DRAWINGS:
The Contractor shall submit 3 sets of "AS BUILT" drawings for all packages (laminated hard copies + soft copy, both in PDF and CAD format), duly updated in BIM model, complete with equipment layout, cable routing, Single line Diagram/ Flow chart etc on completion of the work.

3.19 DEFECT LIABILITY PERIOD

3.19.1 The defect liability/ free maintenance period shall be 12 months (unless otherwise specified)

3.20 DEALING WITH INCONSISTENT RATES:

There are certain items of work which are appearing in Schedule of Quantities of more than one package

like laying of conduits, cable laying etc. The Contractors shall quote the same rates for the identical items which appear in more than one place. If different rates are quoted by the tenderers for such identical items, the same shall be rationalized by considering the lowest quoted rate for such items, for evaluation and acceptance of tender.

3.21 Payment terms for E&M packages: The following percentage of contract rates shall be payable against the stages of work shown herein: or as per Decision of E in C

Stage	Items	On initial inspection of material and delivery at	On completion of pro-rata installation	On completion of testing and commissioning	Handing over of E&M installation with statutory
Package	Percentage of Rate on pro-rate basis				
C1	Internal EI,	As per work progress			
C2	UPS	60	20	10	10
C3	LAN, EPABX System	60	20	10	10
C4	HVAC System	60	20	10	10
C5	AV System	60	20	10	10
C6	Safety Officer , Fire NOC & OC	As per EIC			

CHAPTER – 4 : SPECIAL CONDITIONS FOR E&M WORKS FOR COMPOSITE TENDER

4.1 Association of Other Agencies for Execution of Specialized E&M Works by Main Contractor

After award of work within next 07 days, the main contractor will have to submit Name (s) of the proposed associate contractor (for each component of the E&M works), who fulfill set eligibility criteria for the relevant sub-head/ Component of electrical part ending last day of previous month of submission. The documents will have to be submitted in detail as required, which will be checked as per NIT for approval of the associate contractors. It will be essential that proposed electrical associate agency qualify the eligibility criteria for specialized component of work, given in tender document.

If the main contractor does not fulfil the minimum eligibility criteria, the main contractor has to enter into MoU with agencies/contractor(s) associated by him who is found eligible as per the eligibility criteria, and obtain approval of the Engineer in charge. Copy of such MoU shall be submitted to EXECUTIVE ENGINEER & S M (E), MPC II in charge of each relevant component as well as to Executive Engineer& SM (C) II MPC II in charge of major component. In case of change of associate contractor, the main contractor has to enter into agreement with the new contractor associated by him, only after the written approval of the Engineer in charge.

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.

The department reserves the right to allow the main firm to submit additional Documents/additional names of the associates in case of the deficiencies in documents or in case of no associate getting qualified in respect of certain subheads or the performance of specialized agency is not found appropriate. The same will have to be complied with the main contractor within the time allowed. The decision of the department shall be firm & binding on the intending bidders.

The main firm should submit the willingness from eligible electrical/specialized contractors to get associated with them for execution of the electrical component of works in wholesome manner and as per the conditions set out in the MOU to be entered into, between the one who is awarded the work and the associated eligible electrical contractor.

In support of the eligibility conditions of the proposed associated electrical Agencies, copy of their registration documents, Electrical Contractor's License, GST documents, eligibility documents, Experience Certificate by competent authority, as the case may be, duly countersigned by the applicant as well as signed by the associate contractors, shall have to be submitted. Such associate electrical Agencies will certify that they are not debarred as on the day of application by Central Govt./State Govt. Dept., Central/State Govt.PSU/ Autonomous Bodies.

In event of the concerned E&M agency not performing satisfactorily or failure of associate/ sub-contractor to complete the E&M work, the main contractor on the written direction of the department, shall remove the Associate/ sub-contractor deployed on the work and shall submit name of new associate who fulfills the conditions mentioned in NIT to execute the leftover work without any loss of time or variation in cost to the department in this regard. Such associates shall also enter into Agreement with the main tenderer and shall meet all the guarantee for the equipment already supplied for which payment has been released by the department in part. If any equipment supplied for the work, during the currency of the earlier Associate/sub-contractor and paid partly by the department, becomes redundant/not in a position to be installed and commissioned and put to beneficial use due to change in agency for execution of E&M work, the main contractor shall be liable for replacement of the equipment(S) at no cost to Department. No change of Electrical Contractor will be allowed without prior approval of the Executive Engineer (E), CPWD, .

Executive Engineer (E), shall be the Engineer-in-charge for all E&M Services.

The main contractor shall be responsible and liable for proper and complete execution of all E&M Services, and ensure coordination and completion of both civil and electrical works.

The main contractor has to enter into agreement with contractor(s) associated by him for execution of E&M subheads. Copy of such agreement shall be submitted to Executive Engineer (E), in charge of work as well as to Executive Engineer, In case of change of associate contractor, the main contractor has to enter into agreement with the new contractor associated by him.

The associate or sub-contractor shall attend the inspection of the work by the Engineer-in- charge of E&M

works as and when required. The agencies executing the electrical work should have valid license for LT/HT as applicable and as described in eligibility criteria.
The agency authorized to execute E&M works shall have necessary license required as per Statutory Norms. These documents are required to be submitted to the Engineer-in-Charge of E&M works and prior permission shall be obtained before start of HT/ LT works.
For the different E&M subheads, the main contractor will have to engage the associate electrical contractor/specialized agency in the field after award of work as per following: -
(a) The main firm should either himself meet the eligibility conditions for the respective E&M packages or otherwise he will have to associate an agency meeting the eligibility requirements given below. They will have to submit willingness certificate and Memorandum of Understanding (MoU) for each of the component of the Electrical work for Associate agencies by clearly indicating the applicable component of the work, as per format given in subsequent pages.
(b) The firm should have successfully completed similar works during the last seven years ending upto previous day of last date of submission of tender for each sub head with completion certificate issued by an officer not below the rank of the Executive Engineer or equivalent duly attested.
(c) 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 the last date of submission of bid.
NOTE: Sub-head/ individual component wise total cost is taken as below which is rough cost for the purpose of eligibility criteria only, and should not be used or interpreted for any other purpose.
SITC means: Supplying, Installation, Testing & Commissioning.
The composite contractor and the associated specialized agencies shall give required affidavit on Rs 100/- legal stamp paper to confirm their association.
For works to be executed through OEM directly the lowest tenderer shall submit an undertaking from 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.

(c) OEM shall provide all the spares required for healthy functioning of the equipment for at least useful life or otherwise specified from the date of completion or handover of equipment.

Sl.no.	Name of Component	Component Cost for qualifying specialized agency (in lakh)	Eligibility criteria	Similar Work
C1	Internal EI	Rs. 9,16,091/-	The main contractor should either possess valid Electrical License issued by the Competent Authority of appropriate class OR The main contractor should engage an agency registered in CPWD in appropriate class & category having valid electrical license.	SITC of IEI
C2	UPS System	Rs. 3,41,772/-	One similar completed works costing of value not less than 80% of cost of Component OR Two similar completed works	SITC of UPS System.

			costing each of value not less than 60% of cost of Component OR Three similar completed works costing each of value not less than 40% of cost of Component	
C3	LAN , EPABX System	Rs. 8,92,480/-	One similar completed works costing of value not less than 80% of cost of Component OR Two similar completed works costing each of value not less than 60% of cost of Component OR Three similar completed works costing each of value not less than 40% of cost of Component.	SITC EPABX system
C4	HVAC System	Rs. 32,53,777/-	One similar completed works costing of value not less than 80% of cost of Component OR Two similar completed works costing each of value not less than 60% of cost of Component OR Three similar completed works costing each of value not less than 40% of cost of Component	SITC of HVAC System
C5	AV System	Rs. 15,56,504/-	One similar completed works costing of value not less than 80% of cost of Component OR Two similar completed works costing each of value not less than 60% of cost of Component OR Three similar completed works costing each of value not less than 40% of cost of Component	SITC of Audio video system

WILLINGNESS CERTIFICATE FROM CONCERNED COMPETENT ELECTRICAL CONTRACTOR

(Separate for each sub head of E&M work)

"Name of work: Interior Furniture work , Internal flooring, partition, false ceiling including electrical work, HVAC,CCTV, Audio, Video, Fire Alarm etc for National Critical Information Infrastructure Protection Centre at 5th floor IITBRP Building, Mumbai."

I hereby give my willingness to work as E&M Contractor for Package _____ _____of 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 employee full time technically qualified supervisor for the works.

I will attend inspection of officers of the department as and when required.

Dated:

Signature of Main Contractor

Address:
Telephone:
Email:

Signature of Associate Electrical Contractor
and Registration detail Address:
Address:
Telephone:
Email:

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN

(Separate for each sub head of E&M work)

1] M/S [Name of the firm with full address] [Henceforth called the main contractor]
And
2] M/S [Name of the firm with full address]
[Henceforth, called Associated Electrical Contractor or Electrical Contractor]

For the execution of Work:

"Name of work: Interior Furniture work , Internal flooring, partition, false ceiling including electrical work, HVAC,CCTV, Audio, Video, Fire Alarm etc for National Critical Information Infrastructure Protection Centre at 5th floor IITBRP Building, Mumbai."

We state that M.O.U between us will be treated as an agreement and has legality as per Indian Contract Act [amended up to 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 this MOU allows. In case of any dispute, either of us will go for mediation/arbitration by the CE or above, CPWD. Any of us may appeal against the edition/arbitration to the CE or above, CPWD, His decision shall be final and binding on both of us.

We have agreed as under:
1. The electrical contractor will execute all electrical works in the wholesome manner as per terms and conditions of the agreement. The electrical contractor shall be paid as per standard procedure followed by the department and the agreement between parties. Any type of internal transaction between the electrical contractor and the main contractor shall be as per their convenience and mutual understanding without involving the department.
2. The electrical contractor shall be liable for disciplinary action if he failed to discharge the action[s] and other legal action as per agreement.
3. All the machinery and equipment, tools and tackles required for execution of the electrical works, as per agreement, shall be the responsibility of the electrical contractor.
4. The site staff required for the electrical work shall be arranged by the electrical contractor as per terms and conditions of the agreement.
5. Site order book maintained for the said work shall be signed by the main contractor as well as by the Engineer of the Associated Contractor and by Associated Contractor himself.
6. All the correspondence regarding execution of the electrical work shall be done by the Department with the Associated Contractor with a copy to the main contractor. In case of non- compliance of the provisions of agreement, the main contractor, as well as the associated contractor shall be responsible. The action under clauses 2 and 3 shall be initiated and taken against the main contractor.

- Name of the Package to be indicated:

Signature of Main Contractor

Address:
Telephone: FAX: Email:

Signature of Associate Electrical Contractor
and Registration detail Address:

Address
Telephone: FAX: Email:

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

Countersigned
EXECUTIVE ENGINEER& SM (E&M), MPC-II, Mumbai

1 Bills for the works shall be presented to the Executive Engineer (Electrical) for Packages C1 to C6 by the main contractor. The Executive Engineer (Electrical), shall examine them for pass and payment of Running Bills.
2 The main contractor shall be responsible for co-coordinating the activities of all the works and will ensure progress of all works as per the laid down programme. The main contractor shall also arrange for proper storage of the accessories at site and will be responsible for their watch ward.
3 The Associated Electrical Contractor or his representative is bound to sign the site order book as and when required by the Engineer-in-charge and will comply with the remarks therein.
4 The work completion certificate for E&M works shall be issued in favour of the associated E&M contractor engaged for the particular subhead.
5 The whole work will be treated as complete only when all the parts are completed and completion certificate of each component issued by the competent authority as per CPWD manual. The main contractor is responsible for making good of all defects as pointed out by the competent authority for Packages C1 to C6 while inspecting the works for issue of completion certificate. The main contractor should give warranty of all items of all the systems for C1 to C6 for 12 months from the date of handing over installations to the client department or completion of work, whichever is earlier. The Security Deposit of the main contractor can be released only after the due certification from EE(E) that the system is in good working condition and there is no defect at the end of warranty period.
6 In case the main contractor wants to change the associate electrical contractor during the currency of the contract he shall obtain prior permission of the NIT accepting authority. The substitute should fulfil the requisite qualification as given elsewhere in the documents.
7 The contractor shall use any of the makes as per approved makes for use in the work after obtaining the approval of the Engineer-in-charge.
8 After the award of the work, the contractor has to take note of the inventory of electrical items as per agreement from the Assistant Engineer- in charge and conduit layout drawing pipe, cable lay out for external lighting drawing to be submitted to the Assistant Engineer (E) in charge well before the casting of slab for approval. The main contractor is responsible for necessary co-ordination in this regard.
9 After completion of the work the detailed completion drawings to be submitted in hard copy as well as in AutoCAD format in CD's, along with necessary Purchase Vouchers, Factory test reports, Lab test reports (as per CPWD General Specification for electrical work Part-I internal 2023). Without complying the above requirement the work will be treated as incomplete.
10 All cutting and making holes and finishing the same in building should be responsibility of the main contractor.
11 Drawing of panels/feeder pillar should be got approved before placing order and should be inspected by the Engineer from department before bringing the same to site.
12 All drawing should be submitted both in AUTOCAD and PDF format.
13 Air Conditioning work to be carried out with proper workmanship so that cutting of holes in the walls etc. to be made well in advance after due approval from the Engineer- in- charge. The main contractor should be responsible for proper co-ordination work and making good and proper finishing.
14 The completion Certificate for the whole work can be issued only after the completion of the all the electrical work as per agreement and specification only.
15 Department reserves the full right to check the genuineness of the material supplied at site. The materials should be brought to site only after getting it approved by the Engineer-in-charge well in advance. The test certificate, delivery challans for materials to be submitted along with material. If department feels that material to be tested by national test house or laboratories then the sample to be sent for testing. The cost of testing will be borne by the contractor.
16 The drawings like conduit layout need to be got approved from Engineer-in-Charge, well before casting slab. The drawings should be signed by the site engineer of the contractor and to be submitted to the office well in time for approval.
17 All drawings like panels, electrical distribution drawings are to be submitted well before execution of work.
18 Any delay in the above will be in the account of contractor only.

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

Following work is in the scope of work of Agency / contractor

a) **Work is to be executed at IIT Research Park, for which Part OC for Fire has been obtained for common area. Total 390.00 Sqmt aprox. Interior Area/space is tobe developed under the said work. As per local body norms, for the area tobe developed/constructed for NTRO at IIT research park, Fire NOC shall be obtained by the contractor.**
b) **The main contractor is responsible for all the liasoning work and payment shall be paid as per BOQ.**

c) **Obtaining serviceLT/HTconnection from local distribution company/MSEDCL, the main contractor is responsible for all the liasoning work and providing necessary drawings and data for submission to MSEDCL, nothing extra will be paid on this account.**
d) **Any delay w.r.t. obtaining license/ NOC/connection etc will be on account of main contractor only. Statutory inspection charges if any can be paid by the department on submission of vouchers/bills from appropriate statutory authorities.**
e) **Coordination with consultant as per drawings / TDS submitted by of consultant**

UNDERTAKING FROM OEM/MANUFACTURER

It is to certify that as OEM/Manufacturer giving undertaking to support all the spare parts and its allied accessories etc. of (Name of equipment)----------
for useful service span of the equipment as defined in CPWD Specifications/ BIS norms, on payment basis for the healthy functioning of the equipment's apart from the one year unconditional guarantee of the item against any manufacturing defects and malfunctioning under defect liability period from the date of commissioning of equipment.

(Signature of Contractor/Agency) (Signature of OEM/Manufacturer)

Note: This certificate in required for following Packages:-

Package: (C1) SH I Internal EI
Package: (C2) SH II UPS System
Package: (C3) SH III LAN , EPABX System
Package: (C4) SH IV HVAC System
Package: (C5) SH V AV System

PARTICULAR SPECIFICATION

Package C1 (IEI)

The work shall be generally carried out in accordance with tender specifications and the following specification rules
CPWD General Specification for electrical work 2023 Internal – Part- I & External-II 2023 and as amended up to date.
Indian Electricity Act 2003 amended up to date
National Electrical Code
Indian Electricity Rule 1956 amended up to date
National Building Code 2016.
All the items / equipment specifications shall confirm to relevant section of CPWD General Specification for electrical works 2023 Internal – Part- I & External-II 2023 and as amended up to date.

All materials required to be used on works shall be got approved from the Engineer-in-charge well in advance.
No T & P shall be provided.
Earthing, cement concrete works and testing of the installation shall be done in presence of the Engineer - in-charge or his authorized representative.
Water and electricity shall be arranged by contractor for installation at site of work. However, on completion of the work, the Department shall provide electricity for the testing and final handing over of the installation.
G.I. pipe used for earthing and for other use shall be medium class as per ISI specification & shall be of single piece without anyJoints.
All debris at site shall have to be removed by the contractor before handing over the installation to the department.
General arrangement of the drawing of switch board shall be got approved from Engineer-in- charge before commencement of its fabrication.
The successful tenderer shall make hisown arrangement for storage and watch and ward of materials whether the same brought by him or supplied by the department. He shall remain responsible for watch and ward of installation and other fittings till these are commissioned and handed over to the department.
Cement required for the work shall have to be procured by the Contractor himself. Electrical Contractor will make recess in brick work by cutting chases for provision of conduits and metal boxes according to the elevation drawings for electrical services. Electrical contractor will fix the conduits and boxes and there after close the chases up to the surface of masonry work in cement mortar 1:4 (1 cement :4 sand). Thereafter surface of chases shall be plastered and finished by the contractor to ensure smooth and even surface. Nothing extra shall be paid to the contractor for above operations irrespective of whether the chases are carried out before or after plastering of the wall.
Contractor is advised to visit the site of work to have an idea for the execution of work, failure to do so will not absolve him of responsibility to do the work as specified in agreement.
All the light and fans points should be properly earthed with 1.5 sq. mm, FRLS PVC insulated copper wire.
Termination of wiring inside the DB's and main board should be done by crimped Copper lugs connections, for which no extra payment will made.
Ceiling rose shall be provided for all point wiring.
All metallic parts must be properly bonded to the earth. Earthing lugs shall be provided to all copper earth wires and shall be fixed whenever required by means of anodized bolts and nuts.
Any damage made to wall ceiling etc. of the building made by the contractor shall have to be made good up to the original finish as per requirement within the tendered amount. Nothing extra will be paid on this account.
The quoted rate should be inclusive of all taxes, levies, works contract taxes, duties etc.
Concealed metal boxes & modular accessories shall be of same make.

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

Number of inspection boxes for conduit should be barest minimum, rather these should be avoided.
Steel Fish wire of proper gauge shall be drawn in the conduit while laying in the slab or on wall.
The shop drawing shall be got approved from the Engineer-in-charge before start of work.
Modular accessories shall be of same make.
Size of conduit shall be suitable for provision for insulated copper wire for earthing.
Before starting the fabrication, the contractor shall prepare drawings of the Main Board shall be got approved from the Engineer-in-Charge.The Panel Board shall be fabricated with sheet metal of thickness as specified in the schedule of quantity with powder coated painting.
The panel / Feeder Pillars shall be provided with M.V. danger notice / plates.
Lifting hooks and suitably louvers shall be provided in the panels.
Any damage made to wall/ ceiling etc of the building by the contractor shall have to be made good in the original finish within the tendered amount.
Contractor shall submit the LED fitting test report compliance applicable standard test IES LM 79 & LM80 for Models to be approved by Engineer in Charge supplied at site.
Contractor shall submit all the test results as per CPWD Specification along with completion certificate.
As Built Drawing, Completion plan and Work completion certificate as per CPWD specification shall be submitted in triplicate after completion of the work.
The contractor must deploy Engineer and electrical Supervisor having proper certificate as per I.E. rule.
The contractor must submit labour license (if applicable) and ESI, EPF etc. as labour laws to the office before start of work.
All materials brought to site should be got approved from the Engineer-in-Charge before being used. Test reports of all the materials should be given. Department reserve the right to check the genuineness of the materials.
Civil works like making repairs of walls and painting of walls after fixing of the outlets are to be done by the contractor. Completion will be issued only after the making the walls, ceiling floors etc. in good finished state. The rates quoted should be inclusive all rates nothing extra will be paid other than quoted rates.
The contractor must be submitting sketch drawing of pole before fabrication from the Engineer-in-charge.
Guarantee/Warranty:-The contractor will be required to submit the guarantee/Warranty of light fixtures from the manufacturer to the department for LED fittings/fixtures supplied and installed by them against faulty workmanship, finishing, unsound materials and other related problems, for a period of 60 months from the date of completion of the Project/ Work or handing over of the installation whichever is earlier. If any light fixture fails to perform or is out of order will be replaced by the department out of available stock & the defective fixtures will be handed over to the contractor for replacement/repair. The defective light fixture will have to be repaired/replaced by the contractor with in a period of 15 day from the date of handing over of defective fittings/ fixtures, otherwise the amount of this shall be recovered from the dues of the contractor. Five percent of the cost of Internal EI work (Package- C1) shall be retained as security deposit. This Five percent amount would be released after five years from the date of completion of the entire work under the contract, if the performance of the work done is found satisfactory. However, the security deposit deducted may be released in full against bank guarantee of equivalent amount in favour of Engineer in charge, if so, decided by the Engineer in charge.The Security deposit against this item of work shall be in addition to the security deposit mentioned elsewhere in contract form.
All DB shall be IK-10 rated.
All electrical modular switches shall have metal base plates.

Only NABL Acc. Lab. Reports will be accepted as per respective IS Code/BIS all items.

Technical SPECIFICATIONS
The light fixtures should meet following technical specifications
Standard Guaranty/Warranty of light Fixtures =5 Years from OEM only

Light fixtures shall be suitably hanged/supported from ceiling/wall etc as per good engineering practice as per directions of the Engineer-in-Charge. Suspension arrangement including wire/chain shall be deemed to be included in the scope of work and shall be as per standard design of catalogue of the manufacturer of the fixture.
Contractor shall provide models complying with BOQ description and meeting specifications from the approved makes list. Necessary approval should be taken in the proforma enclosed in the Tender document from Engineer-in-charge (Electrical).
The wiring for internal light fixtures is already available up to location of fitting which will be connected directly to the driver of the fixtures whereas the wiring for external fixtures will be done with 1.5 Sq mm FRLS PVC insulated copper conductor cable.
The following conditions shall be strictly follow

Note:- Models of items of all fixtures should be got approved from the Engineer in charge well before placing any order to the OEM/its authorized dealer. The contractor/agency is required to submit all relevant test certificates documents and along with the proposal. The model along with sample should be approval by Engineer-in-charge before placing any order and supply of same to the site. The decision of Engineer-in-charge is binding in this regard and no variation is acceptable.
Note: If the make of any item to be used in execution is not in the list of approved makes, the agency has to submit the makes for approval from Eng-in-charge. The decision of the Eng-in-charge in this respect shall be final and binding to the agency.
Professional/Industrial LED fittings shall have to be part of price list. Model offittings shall be acceptable as decided by Eng-In-Charge as model available or not available in price list.

Package C- 2 UPS

The scope of work includes supply, installation, testing and commissioning of Online modular type Un-Interrupted (UPS) power supply of with 20 KVA Modular type UPS.
General requirement:

For 20 KVA UPS

(i) Each UPS Frame shall be modular architecture with fully rated pluggable Static switch.
(ii) It shall be possible to insert & remove (Plug In-Plug Out) sub power module from the UPS frame while the UPS is in Online Double Conversion Mode of operation.
(iii) Failure of any sub power module in individual UPS Frame shall not lead to entire Frame Capacity Down but only the failed sub power module capacity shall go down. i.e. In case of Failure of any one Sub Power module, rest of the available power module in the frame shall continue to operate in normal double conversion mode of operation with reduced capacity. This shall also be applicable to all UPS's operating in parallel configuration.
(iv) It shall be possible to interchange the sub power modules among each other in the frame or from any of the other UPS frame without the need of shutdown or programming required by the OEM / Service Team.

Conventional type Online Double Conversion UPS with Micro Controller with Fully rated IGBT rectifier and inverter integrated in UPS. And Inbuilt Phase sequence corrector

1.0. General Specifications

The UPS incomer MCCB/MCB with enclosure (located in UPS room) shall be as per BOQ

1.1. System description

1.1.1 The UPS shall consist of easy to repair rectifiers/inverters.

1.1.2 The UPS shall be provided with separate feeds for rectifier/inverter and the static bypass switch.

1.1.3 Modes of operation: The UPS shall operate as an on-line system in the following modes:

(i) Normal mode: The inverter and the rectifier shall operate in an on-line manner to continuously regulate the power to the critical load. The rectifier shall derive power from the input source and supply DC power to charge the battery.

(ii) Battery mode: Upon failure of the input source, the load shall continue being supplied by the inverter without any switching. The inverter shall obtain its power from the battery. There shall be no interruption in power to the load upon failure or restoration of the input source.

(iii) Frequency converter mode: The output frequency will be fixed to 50 Hz .

(iv) Battery recharge: Upon restoration of the input source, the UPS shall simultaneously recharge the battery and regulate the power to the load.

(v) Static bypass mode: The static bypass switch shall be used for transferring the load to bypass supply without interruption. Retransfer to normal operation shall also be accomplished with no interruption in power to the load..

(vi) Maintenance by pass mode: The UPS shall be provided with a maintenance bypass breaker (MBB) to supply the load directly from the mains supply.

(vii) Auto-restart mode: When the UPS is configured to auto-restart, the UPS shall automatically restart after end of discharge and restoration of the input source.

1.1.4 The UPS shall be provided with RS232, RS485, USB, and dry contact signalling, WEB/SNMP integration and IBMS integration for monitoring. This system must provide a means for logging and alarming of all monitored points.

1.1.5 The UPS shall have nominal voltage of 3 phase 400 V (adjustable for 3 Phase 380 V, 3 Phase 415 V), 50 Hz 4-wire configurations.

Note:-1) The UPS shall be supplied with necessary accessories, connection leads, communication cable (if required), batteries with suitable mounting racks, battery connection leads.

2) The testing and commissioning shall be done by the OEM or OEM Authorized agency.

3)Models of items of all UPS and accessories should be got approved from the Engineer in charge well before placing any order to the OEM/its authorized dealer. The contractor/agency is required to submit all relevant test certificates documents and along with the proposal. The model along with sample should be approval by Engineer-in-charge before placing any order and supply of same to the site. The decision of Engineer-in-charge is binding in this regard and no variation is acceptable.

If any E&M items left in the approved make list, then the agency has to submit the make of the material and in this regard the decision of Engineer-in-Charge shall be final and binding to the agency.

Package C-3 LAN SYSTEM & EPABX

PARTICULAR SPECIFICATIONS FOR LAN WORK

The Network system is to be provided the building for LAN connectivity . The cabling and providing passive components as per BOQ is included in the scope of work. The input connection for the system shall be obtained from the existing LAN network core switch of the 5th floor, IITBRP Building Mumbai campus located at existing administrative building. The work shall be done as per attached BoQ item and CPWD Specifications/ Manufacturer's specification and as directed by the Engineer-in-charge. All ancillary items like connections, lugs, fixing, testing and making system functional is included in the quoted rates and nothing extra is payable.

Functional Requirement:

One single run of Cat-6A cable will be laid for each data point for providing Data connectivity or as per client requirement.

Cable will be laid through existing furniture , ceiling conduit/ floor raceway/trunking at each of the rooms,

cabins, etc.,Steel/ PVC conduit of required size will be used for the cable running at ceiling area. Required Size Wall Mounted Network Rack for LAN connectivity shall be provided at floor as per room and Network Room.

Assumptions:
Work stations will have adequate facility to lay the UTP cable up to individual desks. It is considered that the faceplate will be installed on the wooden/metallic panel of workstations. In absence of the same it will be terminated using back box.

The work in general shall confirm to the rules of the Tariff Advisory Committee for LAN, Switching, Wi-Fi System installation, as for as applicable.
The items of work detailed in enclosed schedule of quantities should be carried out as per CPWD General Specifications as for as applicable.
All materials used in the work as far as applicable shall comply with the relevant Indian Standard specifications with all its up-to-date amendments. These materials having ISI marked shall have precedence over the ones conforming to ISI specifications. The firm shall quote the rate inclusive of all taxes.
All the sundries' materials required in the job shall be arranged by the contractor.
The contractor shall co-ordinate with other agencies working at site.
No T & P shall be issued by the department.
The successful contractor shall do servicing of the installation in the year commencing from the date of its handing over within tendered cost.
The successful firm shall demonstrate the functioning of the system, after it's commissioning and shall give guarantee for one year after completion or handing over whichever is earlier
The successful firm shall do free comprehensive maintenance/servicing of the installation during the guarantee period of one year within the quoted cost.
The contractor shall submit the three copies of completion plan.
Store including watch and ward shall be the responsibility of the successful contractor till handing over of the installation.
Contractors shall obtain the approval of make & model of all equipments, controls wires etc. before its use from the Engineer in charge.
Nothing extra shall be paid on account of above condition of payment.
Making hole in existing slabs/wall the same shall be the responsibility of the contractor.
The contractor has to co-ordinate with main electrical works. So that proper integration can be done without any hesitate.
The system should be guaranteed for 12 months from the date of taking over of the system or completion of complete work whichever is earlier. The system should be maintained free of cost for one year from date of taking over of the system.
The makes should be inclusive of all taxes, transportation etc. nothing extra other than quoted rate will be paid.
The department reserves the right to check the geniuses of material hence the payment of materials will be released only after the satisfaction of Engineer –in-charge.
For Proper supply of material, contractor has to take approval for make and models of items from the Engineer In-charge. The contractor has to supply / furnish the technical data sheet/literature, specification etc. during the approval of materials to be supplied.
The contractor shall furnish the detailed schematic diagram of the system and get it approved from Engineer - in – charge well in time i.e. within 15 days from the award of work.
The contractor shall submit the detailed test reports manufacturing catalogue/ brochure / data sheet, delivery challan against the items supplied at site as per BOQ.
The firm / contractor must give free comprehensive maintenance and defect liability of the system and equipment for one year from the date of handing over of equipment
The rates quoted shall be inclusive all taxes and nothing extra will be paid other than quoted rates.
SCHEDULE OF
REQUIREMENTS
2.2.1 It is the intent of these specifications to define a state-of-art systems, which is user friendly, modular, flexible and expandable. The system is to be designed, installed, customized, tested, commissioned and supported by a local office or agent of the manufacturer by Engineers skilled in

providing functional and efficient solutions to the needs of the Engineer in charge.
2.2.2 The contractor shall have an in-place service support arrangement in Western India equipped with Competent Support Staff, Spare Parts Inventory and all the necessary Test and Diagnostic Equipment to provide support within 24 hours of any breakdowns.
2.2.3 All electronic equipment shall conform to the pertinent regulations governing radio frequency electromagnetic interference and should be so labelled.
2.2.4 All system components and sub-systems are to be fault tolerant and provide satisfactory operation without damage at +5% of the rated voltage and at + 3 Hz variation in line frequency.

3 TECHNICAL DATA

The Tenderer shall submit comprehensive technical information catalogues for all the equipment and material while getting the approval for makes and model no. of equipment. This must include but not necessarily be restricted to, all data etc.

4 PERFORMANCE GUARANTEE AND TESTING

4.1 The Contractor shall execute the work on the basis of indicative designs hereby given and accepted by him with or without modifications or new designs submitted by him at the tender stage and accepted by Engineer in charge, as the case may be. All Variations, i.e. additions, omissions or substitutions necessitated at any time for any reason whatsoever, shall be deemed to have been accepted by the Contractor as not vitiating the performance-based nature of this contract. If any such variations, irrespective of whether such variations are intended to be executed by other agencies employed by the Engineer-in-charge, have any bearing on the performance of this Contract, the same shall immediately be brought to the notice of Engineer-in-charge by the Contractor in writing. In any case the Contractor shall have to guarantee for due and proper performance of the works agreed to be so erected.

4.2 All equipment shall be tested at manufacturer's Works as per latest relevant specifications or in the absence of specification approved testing methods shall be followed and Test Certificates/ Reports submitted to the Engineer-in-charge. The contractor shall intimate in advance the probable date of such tests to the Engineer-in-charge to enable their representatives to witness the tests if they so desire. But under no circumstances shall this absolve the Contractor of his responsibility for Performance of the Equipment or System.
4.3 In addition to the above, all equipment and systems shall be tested after installation as required by various statutory authorities, certifying agencies and as required by various sections of these specifications.
4.4 The Contractor shall take full responsibility for proper operation of the entire system including debugging and proper calibration of each component and sub-system.
4.7 The Contractor shall leave necessary provisions required for fixing instruments, gauges, meters, etc. for testing the installation. All such instruments, services etc. needed for the tests shall be arranged by the Contractor at his own cost.
4.8 It is the sole responsibility of Contractor to obtain all the necessary approvals from the statutory authorities, either prior to, during or after installation as required. All tests specified herein-after and witnessed/ approved by Engineer-in-charge, may be deemed to be invalid at the option of Engineer-in-charge, if the requisite, final and unconditional approvals from the concerned statutory authorities are not obtained by the Contractor.
4.9 The Contractor shall intimate in writing to Engineer-in-charge as and when individual components of the installation are ready for tests required for further progress of erection. All such tests shall be carried out as per these specifications and/ or as directed by Engineer-in-charge and recorded in the presence of Engineer-in-charge or his authorized representatives.
4.10 On completion of erection, the contractor shall thoroughly clean all the equipment, inspect and check the entire installation for correctness and completeness and furnish a detailed report on all components of the installation to Engineer-in-charge.
4.10 The Contractor shall intimate in writing to Engineer-in-charge, the proposed date of initial start-up.
4.11 The Contractor shall, on approval of Engineer-in-charge, proceed with necessary pre-commissioning activities and tests and put the installation initial operation and start-up during which preliminary adjustments and addressing shall be carried out.
4.12 Based on preliminary observations during the initial operation described above, necessary

modifications/ repairs/ replacements/ etc. if any shall be carried out by the Contractor to the entire satisfaction of Engineer-in-charge. On successful completion of initial operation, the Contractor shall proceed with trial runs.

4.13 Notwithstanding approval of tests or equipment or materials by Engineer-in-charge etc., up to the tests in static state as described here-in above, the Contractor shall be required to perform site tests to prove correctness of ratings and performance of equipment and materials supplied and installed by him, in normal operating condition.

4.14 All equipment shall be capable of performing the duties specified in these specifications without damage, distortion or failure of any component.

4.15 The performance of various equipment individually shall not be less than quoted ratings and consumption of power shall not exceed the ratings quoted by the tendered, when tested in normal operating condition. Otherwise, the equipment / material is liable for rejection.

4.16 All test instruments shall be calibrated for accuracy prior to taking the performance tests.

4.17 Failing satisfactory performance of equipment and/ or overall installation after rectification etc. as stated above, the Engineer– in-Charge, at his sole discretion, reserves the option of charging liquidated damages for such non-performance or demand supply and installation of new installation all at no extra cost to Engineer-in-Charge or demand for full refund of all "On Account" payments made to the Contractor for that part of the work which has failed to perform, and the Contractor shall be obliged to do so as directed by the Engineer-in-Charge.

5. INSTALLATION:

5.1 Installation shall be in accordance with the local and state codes, as shown on the drawings, and as recommended by the equipment manufacturer.

5.2 At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect.

6 DEMONSTRATIONS:

6.1 The Contractor shall completely check out, calibrate and test all connected hardware and software to ensure that the system performs in accordance with the approved specifications and sequences of operations submitted.

7 MANUALS

7.1 The following manuals shall be provided at the time of Handing over:

An Operator's Manual shall contain graphic explanations of keyboard use for all operator functions specified under Operator Training.

7.2 Computerized printouts of all data file layouts including all point processing programming details, flowcharts, etc.

7.3 On completion of works "As Built" drawings for completed installation shall be prepared by the Contractor and (3) five copies (Including PDF and AutoCAD file) of the same will be supplied to the Engineer-in-Charge. In addition, (3) Five sets of all Operation Manuals, Technical Literature for the various components of equipment, Controls and Accessories installed, Recommended Spares and Services Manuals will be supplied by the Contractor to the Engineer-in-charge.

Guarantee

8.1 The contractor shall guarantee the entire system installation as per specifications both for components and for system as a whole. All equipment shall be guaranteed for One year from the date of handed over to the Department against unsatisfactory performance or breakdown due to defective design, manufacture and/or installation. The installation shall be covered by the conditions that the whole installation or any part thereof found defective within one years from the date of completion shall be replaced or repaired by the contractor free of charge as decided by the Engineer-in-Charge.

8.2 The guaranty shall cover the following:-

a) Quality, strength and performance of materials used.

b) Safe mechanical and electrical stress on all parts under all specified conditions of Operation.

c) Satisfactory operation during the guarantee period.

d) Performance figures and other particulars as specified by the tendered under

8.3 Labour to trouble shoot, repair, reprogram or replace system components shall be furnished by the contractor at no charge to the Engineer-in-charge during the guarantee period.

8.4 All corrective software modifications made during guarantee period shall be updated on all user documentation.

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

Specification for Firewall

Below are the key specifications for the Firewall model:

DESCRIPTION	SPECIFICATION
Type [UTM/NGFW/Firewall]	NGFW+UTM
Form Factor (RU)	1U
Features	Layer 3 - Layer 4, NAT, VPN, Application Visibility and Control (AVC), User Identity, Next Generation Intrusion Prevention System (IPS), Zero Day Protection/Advance Malware Protection, Web Security Essentials/URL Filtering
Throughput with all features enabled (Under Test Condition) (Mbps) [1]	13000
Throughput (Real World/Prod Performance) (Under Test Condition) (Mbps) 1	12000
Firewall Throughput (Mbps) 1	12600
Threat Protection Throughput (Mbps) 1	2660
NGFW Throughput (Mbps) 1	4760
IPS Throughput (Mbps) 1	7560
UTM Throughput (Mbps) 1	1750
Concurrent Session/Concurrent Connection	10M
New Session/Connection Per Second	150K
High Availability	Yes - Active-Active, Active-Passive
Traffic Handled	TCP, UDP, TCP/UDP, HTTP/TCP, HTTPS, FTP, SFTP, IMAP, POP3, SMTP, SSL/TLS, TELNET
Packet Size (KB)	1024
Type of Interface Supported	GE Copper, 1G/10G SFP+
Number of GE Copper Interface	8 x 1GbE
Number of 10G SFP+ Interface	2 x 10G
Number of QSFP+ 40G Interface	0
Number of GE Small Form Factor Pluggable (SFP) Interface	0
Number of QSFP28 100G Interface	0
Number of WAN Ports [2][3]	2
Number of IPSec VPN Peers supported (Site to Site)	2870
Number of IPSec VPN Peers supported (Client to Site)	2870
Number of SSL VPN Peers supported (Client to Site)	780
Type of Storage Disk	SSD
Storage Capacity (GB)	512
Power Supplies	Dual/Single
Hot Swappable Power Supply	Yes/No
Redundant Fan	Yes
Hot Swappable (Redundant Fan)	No
Type of Processor	x86
Interface Expansion Slots Supported	0

Details of the Firewall Policies for the Firewall provided with the License	Web Security Essentials/URL Filtering - Yes IPS License - Yes Application Visibility License - Yes APT (Advanced Persistent Threat) License - Yes Anti Malware Protection - Yes C&C attacks - Yes Geo IP Protection - Yes Zero Day Threat Protection - Yes Gateway Anti Virus - Yes Gateway Anti Spam - Yes
Security Intelligence	IP - Yes Domain - Yes URL - Yes Passive Detect Endpoint - Yes IOC Intelligence
NGIPS Signature supported	22000
Certification	TEC (MTCTE-ER) Unified Threat Management Variant, Common Criteria (In Progress)
IPv6 Ready from Day 1	Yes

Note:- Make and Models of items of LAN/EPABX system should be got approved from the Engineer in charge well before placing any order to the OEM/its authorized dealer. The contractor/agency is required to submit all relevant test certificates documents and along with the proposal. The model along with sample should be approval by Engineer-in-charge before placing any order and supply of same to the site. The decision of Engineer-in-charge is binding in this regard and no variation is acceptable.

Note:- If the make of any item to be used in execution is not in the list of approved make, the agency has to submit the makes for approval from Eng-in-charge. The decision of the Eng-in-charge in this respect shall be final and binding to the agency.
All the materials used in work shall have to confirmed to relevant codes and specifications strictly.
Drawings are tentative may be changed as per site condition with the approval of Engineer-in-charge.EPABX SYSTEM (Only Installation)
Scope of work includes Installing, Commissioning, Testing and Handover of Existing EPABX for providing telephone connectivity in the proposed building at IITBRP, Mumbai. The system shall be seamlessly integrated with existing EPABX system in the , Mumbai campus to create the single network for voice communication. Necessary cabling required for the interconnection shall be in the scope of tender as per BOQ. LAN network shall be used for connectivity between the buildings. The details of the scope is as given below.
.
The system should be capable to support Analog, Digital and IP and Digital Phones and shall be expandable.
The IP-PBX/ EPABX shall support IP distributed architecture for future scope. IP access points shall be centrally administrable from the host system. Peer to Peer connectivityshallbepossibleonIPendpoints.Thesystemshallhaveuniversal ports for line/ trunk cards, where in any peripheral card can be inserted in any slot of the peripheral shelf, thereby enhancing the flexibility of the configuration.

Requirements
Any application software as required for completion of the project shall bewithin the scope of the bidder. The supplier shall be responsible for allupgrades and updates of the firmware and application software during the warranty period and no separate amount should be claimed for this. Supply,
The agency shall provide logical schematic/ single line diagram for IP-PBX / EPABX system indicating the equipment layout and cabling before start of the work considering the existing IP-PBX / EPABX system, for approval of Engineer-In-Charges given. The actual connections, equipment will be as per site conditions and has to be approved by E-in-C.
The successful firm shall demonstrate the functioning of the system, after it's commissioning and shall give guarantee for one year after completion or handing over whichever is earlier.

The agency has to co-ordinate with the specialised agency approved for LAN system work for providing the cabling and network switch requirements for IP-PBX /EPABX system. The main contractor shall

ensure the co-ordination between various agencies for fulfilment of the various requirement of the different packages.
The specialized agency for IP-PBX / EPABX system shall prepare the drawing indicating the location of telephone points and other equipment of system, and same shall be submitted for approval of Engineer-In-Charge. After the approval the drawing shall be shared with the agency laying the conduit and the specialised agency for LAN system work, so that the conduit laying and cabling work can be undertaken accordingly
Note:- Make and Models of items of IP-PBX/ EPABXsystem should be got approved from the Engineer in charge well before placing any order to the OEM/its authorized dealer. The contractor/agency is required to submit all relevant test certificates documents and along with the proposal. The model along with sample should be approval by Engineer-in-charge before placing any order and supply of same to the site. The decision of Engineer-in-charge is binding in this regard and no variation is acceptable.
Note:- If the make of any item to be used in execution is not in the list of approved make, the agency has to submit the makes for approval from Engineer in-charge. The decision of the Engineer in-charge in this respect shall be final and binding to the agency.
All the materials used in work shall have to confirmed to relevant codes and specifications strictly .
These are the barest minimum specification. The bidder/ agency is free to provide with better specification and with more facilities or as per direction of Engineer incharge
All the materials used in work shall have to confirmed to relevant codes and specifications strictly .

Package C 4 (HVAC SYSTEM)

ADDITIONAL SPECIFICATIONS (TECHNICAL)

1.0 The work shall be carried out at site NTRO , Mumbai as per the following Tender Specifications for Air Conditioning works and generally in accordance with the following:
CPWD General Specifications for Air conditioning works – 2024, amended uptodate.
CPWD General Specifications for Electrical Works Part I Internal – 2023, amended upto date.
CPWD General Specifications for Electrical Works Part II External – 2023, amended upto date.
Relevant IE rules, IS Codes and as per directions of Engineer-in-charge
This specification covers manufacture, testing as may be necessary before dispatch, delivery at site, all preparatory work, assembly and installation, final testing, commissioning, operation and maintenance of plant for one year during guarantee period as per Appendix-H of CPWD General Specification for HVAC-2024 amended up to date, for the following works.
Nothing extra shall be paid on account of these as the same are to be read along with schedule of quantities for the work.
2.0 WORKS TO BE DONE BY THE TENDERER :
Following works shall be done by the contractor and cost of these works deemed to be included in their tendered cost-whether specifically indicated in the schedule of quantities or not:-
All the Heat load calculation should be done by Agency from OEM / Consultant for exact TR calculation & as per BOQ also all the AUTOCAD drawings are to be prepared by agency of all services from C 1 to C6 packages mentioned in NIT or as per direction of engineer incharge

Foundations for equipment including foundation bolts and vibration isolation spring/pads (including PCC pedestal foundation for AHUs or electric panels if required).
Suspenders, brackets and floor/wall supports for suspending/supporting ducts and pipes. Required for AHU, Ducting etc
Excavation and refilling of trenches in soil wherever the pipes are to be laid directly in ground, including necessary base treatment and supports.
Sealing of all floor slab/wall openings provided by the Department or contractor for pipes and cables, from fire safety point of view, after laying of the same.
Painting of all exposed metal surface of equipment and components with appropriate colour and matching it with existing surface.
Making opening in the walls/floors/slabs or modification in the existing openings wherever provided for carrying pipe line, supply air ducts, return air duct/ space, cabling etc. and making good the same.
Making good all damages caused to the structure during installation and restoring the same to their original finish.
Any other minor work, pertaining to HVAC work, required for the successful execution of the system and its operation.
Data manual and Drawings to be furnished by the tenderers:
After Award of work the contractor shall prepare & submit three sets of following drawings and get them approved from the Engineer-in-charge before the start of the work. The approval of drawings however does not absolve the contractor not to supply the equipment/ materials as per agreement, if there is any contradiction between the approved drawings and agreement.
Following to be approved
a) Lay out drawings of the equipment to be installed.
b) Drawings including section, showing the details of erection of entire equipment including their foundations, etc.
d) Ducting drawings showing sizes, locations of dampers, grilles & diffusers.
e) Electrical wiring diagrams for all electrical equipment and controls including the sizes and capacities of the various cables and equipment.
f) Dimensioned drawings of all electrical and control panels, Drawings showing the details of all insulations and vapor barrier works, Drawings showing details of supports for pipes, cable trays, ducts etc .
g) Any other drawings relevant to the work .
3.0 Completion Drawings
3.1 Three sets of the following laminated drawings shall be submitted by the contractor while handing

over the installation to the Department. Out of this one of the sets shall be laminated on a hard base for display in the service room. In addition one set will be given on compact disc.

a) HVAC system machine installation drawing

b) Indoor installation drawings.

c) Duct layout drawings with their sizes and locations, and sizes and locations of all dampers, grills & diffusers.

d) Control wiring drawings with all control components and sequence of operations to explain the operation of control circuits,

4.0 The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturers for all items of equipment regarding installation, adjustments operation and maintenance i/c preventive maintenance and troubleshooting together with all the relevant data sheets, spare parts catalogue etc. all in triplicate.

5.0 Extent of Work :

5.1 The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning as may be required by the department. The term complete installation shall not only mean major items of the plant and equipment covered by specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender document in connection with this contract.

5.2 Minor building works necessary for installation of equipment, foundation, making of opening in floors or in walls and restoring to their original condition, finish and necessary grouting etc. as reqd.

5.3 The work is turnkey project. Any item required for completion of the project but left inadvertently shall be executed with-in the quoted rate.

6.0 Inspection and testing:

Initial inspection at works and final inspection and testing at site shall be carried out as per chapter of CPWD General Specification for HVAC works 2024 as amended to date.

6.1 Compliance with Regulations and Indian Standards, Indemnity & Insurance:

All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards as detailed in para of CPWD General Specifications for HVAC work-2024.

6.2 Insurance and Storage:

All consignments are to be duly insured upto the destination from warehouse to warehouse at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over duly installed, tested and commissioned.

7.0 Verification of correctness of Equipment at Destination:

The contractor shall have to produce all the relevant records to certify that the genuine equipment from the manufacturers has been supplied and erected.

8.0 Operation and Maintenance:

The maintenance schedule during warranty period shall be as per CPWD General Specification for HVAC-2024.

AHU UNITS

1.The AHU units shall be factory assembled, weather proof casing constructed from heavy gauge mild steel panels as per BOQ The unit should be completely factory wired, tested with all necessary controls

2.The make and model should be got approved by E in C before procurement of material

3.Item shall be executed as per BOQ and connected to existing Water cooled chiller unit , contractor is advised to visit the site

GENERAL TERMS & CONDITIONS

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

The work shall be carried as per CPWD general specification for electrical works 2023 (Internal) & part-II. (External) as amended up-to-date and in accordance to the Indian Electricity Rules 1956 and Indian Electricity Act 2003 and HVAC-2024 as amended up-todate and as per the instructions of the of the Engineer-in –charge including as below and nothing will be paid extra.
All the material to be used on the work shall be got approved from the Engineer-incharge.
The material shall be supplied at site in original paking is accepted.
All the malba/debris shall have to be removed from site of work, immediately.
The contractor will be responsible for transportation, storage and watch & ward of material & other items for which nothing extra shall be paid.
The contractor shall be responsible for any damage done to the building or electrical installations during the execution of the work. Damage, if any shall have to be made good by the contractor at his own cost failing which the same shall be got rectified & made good at the risk & cost of the contractor.
The contractor/his authorized representative is bound to sign the site order book as and when required and he is bound to carry out the instructions recorded there in.
No claim for idle labour shall be entertained.
Any accidental liabilities will be the responsibility of the contractor.
At least one year warranty must be given for smooth functioning of all equipment after installation and handing over to department. Under the terms of warranty, the firm / contractor will undertake to provide free service and / or replacement (As the need be) for rectification of any “Manufacturing defect” & Damages. Defects arising during transit, unloading at site, shifting, installation will be covered under terms of warranty.
Making opening and its repair in the walls / floors / slabs or modification in the existing opening for pipes / cable is to be done by the tenderer free of cost.
The work shall be treated as completed, when all the installation are handed over to the department and all the defects are removed to the entire satisfaction of Engineer-inCharge.
No T & P will be issued to the contractor.
Complete testing is to be given up to full satisfaction of the Engineer-in-charge.
The tenderer should in his own interest visit the site and familiarize himself with the site condition before tendering. For any clarification tenderer may discuss with the Engineerin- charge.
The rates quoted by the firm shall be inclusive of GST and nothing extra shall be paid on this account.
The material provided by the contractor will be of latest manufacturing and packing.
All repairs & patch work shall be neatly carried out to match with the original finish & all damages caused to the building installation during the execution of work shall have to be made good by the contractor immediately at his own cost to the entire satisfaction of Engineer-in-charge. In case contractor fails to comply with the instructions of the Engineerin-charge, Engineer-in-charge shall be at liberty to get the work done by any other agency and recover such amount as paid to the other agency from the bills of the contractor. Contractor shall have no claim, whatsoever, on the extent of such amount.
Rejected materials should be immediately cleared from the site by the contractor other wise a recovery @ 500/- per day shall be made.
The contractor shall make his own arrangement for storage of materials either brought by him or issued to him by the department.
The contractor shall make his own arrangement at his own cost for electrical/ general tools and plants required for the work.
The contractor shall ensure that the staff employed by him for execution of the electrical work, possess the valid electrical license issued by competent authority. Consequences arising due to the fault of the contractor in not complying with the above condition shall be the responsibility of the contractor.
The materials shall be procured only from the manufacturers or their authorized dealers & documentary proof for such procurement & supply shall be produced by the contractor if desired by the department. The department reserves the right to send such materials to the manufacturers or authorized test laboratory to verify the genuine nesss & quality of the product. Contractor shall preserve the copies of invoice, test certificates, gate pass etc to prove the genuineness of material / purchases. The responsibility of procurement, genuine material of specialized works shall rest with contractor.

The contractor will submit the GST bill along with warranty card of material in proof of genuineness of material before claiming their payment.
The contractor will provide one year free service under defect liability period.
The dismantle material if any other than credit dismantle material shall be handed over to the Client / CPWD

A) COPPER PIPING

Seamless soft/Hard drawn copper tumbling type L shape be used to make connections to equipment, wherever required or specified.

Flare fittings e.g. flare nuts, tees elbows, reducers etc. shall all be as per BOQ / NIT

B) REFRIGERANT PIPING

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

All joints in copper piping shall be sweat joints using low temperature brazing and or silver solder. Before joining any copper pipe or fittings, its interiors shall thoroughly cleaned by passing a clean cloth via wire or cable through its entire length. The piping shall be continuously kept clean of dirt etc. while constructing the joints. Subsequently, it shall be thoroughly blown out using nitrogen.

After the refrigerant piping installation has been completed, the refrigerant piping system shall be pressure tested using nitrogen at pressure of 20 Kg. per Sq. cm and 10 Kg. per sq. cm. (low side). Pressure shall be maintained in the system for 24 hours. The system shall then by evacuated to minimum vacuum of 700 mm hg. and held for 24 hours.

The thickness of copper piping shall not be less than as mentioned in BOQ/ Specifications.

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

C) PIPE INSULATION

Refrigerant pipe Insulation

The whole of the liquid and suction refrigerant lines including all fittings, valves and strainer bodies, etc. shall be insulated with electrometric nitrite rubber as specified in BOQ.

Drain Pipe Insulation

Drain pipes carrying condensate water shall be insulated with 6 mm thick electrometric nitrite rubber insulation.
For Proper drainage of condensate. U Trap shall be provided in the drain piping (wherever required). All pipe supports shall be of pre-fabricated & pre painted slotted angle supports, properly installed with clamps etc.

D) PERFORMANCE TESTS

The installation as whole shall be balanced and tested upon completion and all relevant information, including the following shall be submitted to the department.

a) Air Volume passing through each unit, duct, grilles, apertures.
b) Inside DB temperature and relative humidity over specified period.

c) Electrical current reading, in amperes of full and average load running, and starting together with name plate current of each electrical motor.
Continuous recording over a specified period, or ambient wet and dry bulb temperatures under varying degrees of internal heat load and use and occupation in each zone of each part of the building.

1 Specifications for Indoor cassette type Units.

Cassette type indoor units shall be as per BOQ. These units shall be installed existing building . The maximum allowable height for the cassette type units shall be as per site conditions. The unit must have in built drain pump, suitable for vertical lift. Unit must be insulated with sound absorbing thermal insulation material like Polyurethane foam. The noise level of unit at the highest operating level shall not exceed 40 dB(A), . Unit shall have provision of connecting fresh air without any special chamber & without increasing the total height of the unit The unit shall be supplied with suitable decorative panel. The unit shall be supplied with filter with Mold Resistance. The filter shall be easy to remove, clean & re install. The unit will be connected in series to a suitable out door unit & it must be possible to operate the unit independently, through corded/ cordless remote specified in the "Bill of quantities". The unit shall be supplied with following from the factory
Operation Manual
Installation Manual
Paper pattern for installation
Drain hose/ Clamp metal/ Washer fixing plate/ Sealing pads/ Clamps/ Screws/ Washer for hanging bracket/ Insulation for fitting

Note: The First Charge of refrigerant in the complete system is in the scope of the work and nothing extra shall be paid on this account.

Note:-Make and Models of items of HVAC system should be got approved from the Engineer in charge well before placing any order to the OEM/its authorized dealer. The contractor/agency is required to submit all relevant test certificates documents and along with the proposal. The model along with sample should be approval by Engineer-in-charge before placing any order and supply of same to the site. The decision of Engineer-in-charge is binding in this regard and no variation is acceptable.
Note:- If the make of any item to be used in execution is not in the list of approved makes, the agency has to submit the makes for approval from Eng-in-charge. The decision of the Eng-in-charge in this respect shall be final and binding to the agency.
All the materials used in work shall have to confirmed to relevant IS strictly.

Specification for if applicable (Fire Fighting system)

GENERAL INFORMATIONABOUT WORKS

The work consist of works at NTRO , Mumbai involving Building having existing floors, the work as per NBC-2016 and CPWD General Specification of Wet Riser & Sprinkler System 2020 Part – V.

The work shall be executed as per CPWD General Specifications for electrical Works Part- I, II & IV, V as amended upto date, relevant I.E. Rules, BIS/ IEC and as per directions of Engineer-in-Charge. These additional specifications/ conditions are to be read in conjunction with above and in case of variations, specifications given in these conditions shall apply. However, nothing extra shall be paid on account of these additional specifications and conditions, as the same are to be read along with schedule of quantities for the work.

FIRE PROTECTION SYSTEM
SCOPE:
1.1.1 Contractor shall furnish all labor, materials, equipment for supply, installation testing and commissioning of complete firefighting system. In general, the item of works shall include
1.2 APPLICABLE CODES AND STANDARDS

All equipment, supply, erection, testing and commissioning shall comply with the requirements of latest Indian Standards and code of practice as amended up to the date of submission of Tender. All equipment and material being supplied shall meet the requirements of BIS and other relevant standard and codes.

Earthing shall be done complete as per CPWD specifications.

LIST OF APPROVED MAKES OF EQUIPMENT AND MATERIALS

B.1 The equipment and materials to be used in the execution of this contract shall be selected from the approved make list provided in NIT unless otherwise specifically agreed by Engineer-in-charge.
B.2 The successful contractor shall prepare a list of equipment and materials selected from the approved list, proposed to be used by him for execution of the contract. Before placing orders on suppliers or delivering the equipment and materials to site, the Contractor shall obtain approval from Engineer-in-charge, whose decision shall be final and binding on the Contractor.
B.3 Any equipment of material not specified under here but required for execution of the work shall be as per Technical Specification, of best quality, preferably with ISI approval and from a reputed manufacturer for which the prior approval of the Engineer-in-Charge is required.

C5- AV system

Terms and Conditions

For Interactive Display should be BIS, CE, FCC, and RoHS certified and shall comply with ISO 9001, ISO 14001, ISO 45001, ISO 20000, ISO 22301, ISO 27001, and ISO 50001 standards issued by a NABCB-accredited agency, and shall include GMP and EPR certification along with a valid factory license in the name of the OEM. The OEM shall have a registered office and active operations in India for a minimum of 15 years, and a certificate of incorporation shall be submitted along with the bid

Manufacturer Authorization Letter is mandatory and shall be submitted

The work includes SITC of HDMI Extenders of RX & TX The system integration of the items mentioned in BOQ with existing system in with in the scope of contractor nothing shall be paid extra

LIST OF APPROVED MAKES

(FOR ELECTRICAL WORKS)

C-1 INTERNAL AND EXTERNAL ELECTRICAL INSTALLATION

SR. NO.	ITEM	MAKE
1	Modular Switches/ Socket outlets /Telephone/TV Outlet sand wiring accessories with cover plate	Legrand / Schneider /BCH /MK (All Modular accessories shall be of same make) Lauritz Knudsen/Legrand/ BCH
2	PVC insulated FRLS Copper conductor wires	RR Kabel /Finolex/BCH
3	MS Conduit& Accessories (ISI Make)	AKG/NIC / Precision/Pressfit
4	PVC Conduit& Accessories (ISI Make)	AKG/Kalinga/Precision/Pressfit
5	Pop Up/ Under Floor Boxes	Legrand/OBO Betterman/Belden
6	Cable Tray	BEC/OBO Bettermann/ Legrand / U - protect
7	Raceways/Floor Trunking/wall channels/DLP Trunking	OBO/Bettermann/Legrand/ U-Protect
8	Internal LED Light Fixtures(General Lighting,, Ceiling Panels and Ceiling Light components i/c LED Modules DALI dimmer interface and Driver, Light, Suspended Light, Bulkhead fitting, LED Strip light)	Endo light / Lighting Technology / Regent/ Phillips/ Wipro
9	Decorative Wall Light Fitting, Wall Washer, Picture Light fitting, Table Lamp, Bollard fitting and other decorative fitting	Endo light/ Lighting Technology/ Regent
10	Distribution Board	Lauritz Knudsen (Formerly L&T) / Legrand//Schneider/ABB/Siemens/ BCH
11	Miniature Circuit Breakers(MCB).	Lauritz Knudsen (Formerly L&T) / Legrand /Schneider/ ABB/ Siemens/ BCH (To be of same make as DB)
12	Residual Current Circuit Breaker (RCCB)	Legrand /Lauritz Knudsen (Formerly L&T) /Schneider/ABB/Siemens/ BCH / (To be of same make as DB)
13	Loose WireBox	Legrand / Lauritz Knudsen (Formerly L&T) /Schneider/ABB/Siemens/ (To be of same make as DB)/
14	SurgeProtectionSystem (SPD)	ABB/ Lauritz Knudsen (Formerly L&T) / Siemens/ Emerson/ Legrand/OBOBetterman/ MKHoneywell/ CAPE
15	MouldedCaseCircuitBreaker(MCCB)	Schneider(NSX)/Lauritz Knudsen (Formerly L&T) (DSine)/Siemens(3VL)/ ABB(Tmax)/Legrand/ BCH
16	Power/Aux.Contactor	Schneider/Lauritz Knudsen (Formerly L&T)//Siemens /ABB
17	ChangeOverSwitch	Schneider/Lauritz Knudsen (Formerly L&T)/Siemens /ABB

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

18	Protection Relay (Numeric Type)	Areva/Siemens/ Lauritz Knudsen (Formerly L&T)/Schneider
19	Indication lamp and push button	GE/ Lauritz Knudsen (Formerly L&T)/Siemens/Schneider
20	Electronic meter and logger	Lauritz Knudsen (Formerly L&T)/Conzerv/Siemens/Schneider
21	Selector Switch	Siemens/Lauritz Knudsen (Formerly L&T)/Schneider/ABB
22	Astro Timer Switch	Schneider/Lauritz Knudsen (Formerly L&T)/Siemens /ABB/ GEC
23	LT Cables	RRKabel /Finolex/ BCH/KEI/Polycab
24	Call Bell	Anchor/ Vinay/ Havells
25	DWC/HDPE Pipe	Dura-Line/Rex/Carlon/Emtelle/Gemini Only ISI marked product to be used.)
26	G. I/ M. S Pipes	Tata/JindalHissar/SAIL
27	G.I. Fittings	UNIK/Zoloto/SS
28	Ball Valves	Honeywell/Sant/Leader/Zoloto
29	Butterfly Valve/Check Valve	Zoloto/Kirloskar/Leader/Sant/ Honeywell
30	Y–Strainers	Kirloskar/Leader/Zoloto/Sant/ Honeywell
31	Vibration isolators-Expansion joints(Rubber bellow)/Antivibration pads	Resistoflex/Kanwal/Dunlop/Ewren
32	PressureGauge	Emerald/Fiebig/H.Guru/Danfoss
33	UPVC/CPVCPipe	Astral/ Supreme/ Finolex/ Prince
34	S S pipe and fittings	J-press/Kan-therm/Geberit/Racmet

C-2 UPS System

SR. NO.	ITEM	MAKE
1	UPS	Schnedier-APC/ABB /Legrand-Numeric/Emerson - Vertiv/ Siemen/ EATON UPS
2	Batteries	Exide/Amaron /Panasonic/TATA
3	MCB /MCCB / SS Enclosure	Schneider /Lauritz Knudsen (Formerly L&T)/Siemens /ABB /Legrand

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

C-3 - Local Area Networking / EPABX

SR. NO.	ITEM	MAKE
1	UTP CAT 6ACables	Leviton/Derwiser/Panduit/Nexans/ Legrand/ Genius Network /Honeywell
2	CAT6A I/O Socket / Faceplate	Legrand /Schneider /LK/ Genius Network
3	OFC Components	Leviton/Derwiser/Panduit/Nexans/ Legrand/Genius Network
4	GI Box	Wipro /Legrand /Schneider
5	NetworkRacks	APCScheider/Rittal/APW/Valrack/ Genius Network
6	ServerRacks	APCScheider/Rittal/APW/Valrack/ Genius Network
7	Patch panel / Patch Cord /Fiberpatchcord /pigtails/ LIU /Adapters /Connectors /RJ45Jack & Associated Items	Leviton/Derwiser/Panduit/Nexans/ Legrand/Genius Network

1	Fire Wall	AnnexGate/Sophos/Fortinet/Sonicwall/CISCO/X-stream
2	Telephone Cable / wire	Duly ISI marked: Finolex / Legrand / Molex
3	Telephone Junction box & Module	ITL/ Krone/ MALSON
4	EPABX	Existing System (Panasonic)

C-4 HVAC System

SR. NO.	ITEM	MAKE
1	HVAC System, Indoor and outdoor Unit/Ductable Unit/Treated Fresh air Unit	Mitsubishi Electric / Toshiba / O-general / Daikin/LG
2	Hi Wall Split Unit/ Cassette Unit	Mitsubishi Electric / Toshiba / O-general / Daikin/Bluestar
3	Refrigerant Copper Piping	Maxflo/Modern/ Hindustan/Rajco/Total line/Mandev tubes /Jindal Refrigeration
4	GSS/GISheet	SAIL /Jindal/TATA
5	Factory Made GSS Duct	Rolastar/Ductofab /Zeco
6	Grilles/dampers/diffusers/Louvers/VCD/Fire damper / Motorised Damper	Caryaire/Cynore/DynamicEquipment/Airflow
7	Fire Damper Actuator	Belimo/Siemens/ Honeywell
8	PVC/UPVC/CPVCPipe	Astral/ Supreme/ Finolex/ Prince
9	Nitrile Insulation	Armacell/ALPAeroflex/Vidoflex/Eurobatex
10	Glass Wool insulation	UPTwiga/Own corning
11	Adhesive	Pidilite/Paramount /CPRX
12	Vibration isolators-Expansion joints(Rubberbellow)/Antivibration pads	Resistoflex/Kanwal/Dunlop/Ewren
13	Fastners	Hilti/Fischer

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

14	IE-3Motors	ABB/Siemens /Kirloskar /Crompton
15	WeldingRod	Essar/Essab/Ador
16	LT Cables	KEI/Havells/RRKabel /Finolex
17	Bimetallic CableLug	Dowell/Comet/Jainson
18	Cable Glands DoubleCompression.	Dowell/Comet/Jainson
19	G I Cable Tray	OBOBettermann/ Lgrand/PrefabAxis
20	Underdeck Insulation	Uptwiga / Armacell / Armaflex / Aeroflex /Superloan / K-flex.
21	Flexible Ducts	ATCO / Sevenstar / Supaflex
22	PVC Conduit & Accessories (ISI Make)	BEC/AKG/Kalinga/Precision/Pressfit
23	AHU	Zeco / Systemair / Citizen / Carrier
24	Fan coil Unit	Bhutoria / Kubic / Midea / Crueze

C-5 Audio-Video System

SR. NO.	ITEM	MAKE
	Display	
1	Interactive Display	LG/Samsung/Sony /Geeken/ Panasonic
2	Display Brackets	Multibracket/ PeerlessAV/ Btech or as per OEM of Display
3	HDMI TX / RX	Crestron/ Extron/ Lightware
5	Pop Up Box/Cable Cubby	AMX/ Lightware/ Crestron/ Extron
6	Speaker & Microphone cable	Beldon/ Sommer/Crestron/ Extron
7	Type C Cable	Crestron/ Extron/ Lightware
8	USB Cable	Crestron/ Extron/ Lightware
9	Equipment Rack	APC Scheider/Rittal/APW/Valrack
10	HDMI Cable	Crestron/ Extron/ Lightware
11	Connectors & Patch Cables	Neutrik/ Amphenol/ Honeywell

Note:

1. The contractor shall obtain prior approval from the Engineer-in-Charge before placing order for any specific material or engaging any of the specialized agencies. The contractor shall make a detailed submittal with catalogues and highlighted proposed specification as well as full details of the works executed by the specialized agencies, as specified.
2. Unless otherwise specified, the brand/ make of the material as specified in the item nomenclature, in the particular specification and in the list of approved materials attached in the tender, shall be used in the work.
3. In case of non-availability of the brand specified in the contract the contractor shall be allowed to use alternate equivalent brand having superior specifications, of the material subject to submission of documentary evidence of non-availability of the specified brand within the quoted rates. If required, necessary cost reduction on account of above change shall be made for the material of lower cost.
4. The Engineer-In-Charge shall verify that manufacturers must have valid IS Certification as on date for materials wherever applicable.
5. The mentioning of particular make under approved makes does not fulfil automatically for

acceptance. The make shall comply all the general, particular technical specifications, IS specifications wherever exist and other conditions of the Contract.

6. The makes approved by SDG office is also considered as included in this list, however cost of such material shall be within -10% of highest valued make given in preferred make list.

7. For any item not covered in the above list, the contractor shall submit the make/ model and sample for seeking approval from the Engineer-in-charge before procurement / supplying the material.

(SCHEDULE FOR ELECTRICAL COMPONENT)

SCHEDULE OF QUANTITIES

Name of Work :- Interior Furniture work , Internal flooring, partition ,false ceiling including electrical work, HVAC,CCTV, Audio , Video, Fire Alarm etc for National Critical Information Infrastructure Protection Centre at 5th floor IITBRP Building, Mumbai.					
Sr No.	Description of Items	Qty.	Unit	Rate	Amount
SH-I (Internal EI)					
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required.				
1.1	Group C	50	Point	1704.00	85200.00
2	Wiring for twin control light point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, 2way modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required.	5	Point	1803.00	9015.00
3	Supplying and drawing following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.				
3.1	3 x 1.5 sq. mm	300	Meter	104.00	31200.00
3.2	3 x 4 sq. mm	800	Meter	222.00	177600.00
3.3	6 x 4 sq. mm	500	Meter	424.00	212000.00
3.4	9 x 4 sq. mm	200	Meter	616.00	123200.00
4	Supplying and drawing following pair 0.5 mm dia FRLS/HFFR PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.				
4.1	2 Pair	300	Meter	39.00	11700.00
5	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
5.1	20 mm	200	Meter	151.00	30200.00
5.2	25 mm	500	Meter	168.00	84000.00
5.3	32 mm	100	Meter	209.00	20900.00

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

6	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	39	Each	659.00	25701.00
7	LED Down lighter (SMD Type) (System lumen Unit Rate efficacy ≥ 105 < 120 lm/Watt)Supplying, Installation, Testing & Commissioning of LED Recessed/ surface Down lighter (Round/ square/ Rectangular) SMD type of following body material with PMMA and prismatic diffuser and construction as per IS : 10322 with driver as per the requirement with Driver efficiency >85%, Operating voltage AC 140-270 Volt, frequency 50/60 hz, Operating temp range -50C to 400C, internal surge protection of 2.5 KV with Short & Open circuit protection ,THD < 10% , P. F.≥0.95, IP20, CRI >80,UGR (Unified Glare Rating) < 19, Flicker free (flicker should be below 5%), life time (LED, Driver & electrical circuitry), of minimum 50000 Burning Hours with 70% of initial Lumen maintained till life ends, CCT 3000°K /4000°K / 5700°K / 6500°K (As per ANSI Bin), SDCM (Standard Deviation Colour Matching) <3, Maximum				
	power consumption should not more than the specified rating and Fixture shall be confirming to relevant BIS standards. Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing Complete in all respect i/c external connections with 1.5 sq.mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy ≥105 and <120 lm/Watt output . LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C) Powder coated die cast /Extruded aluminium Body including trim	20	Each	624.00	12480.00
8	LED Panel light 2x2 ft. (System lumen efficacy ≥105 <120 lm/Watt) Supplying, installation, Testing & Commissioning of Panel light 2x2 ft., of following body material and construction as per IS : 10322 with driver as per the requirement with Driver efficiency >85%, Operating voltage AC 140-270 Volt, frequency 50/60 hz, Operating temp range -5 0C to 40 0C, internal surge protection of 2.5 KV with Short & Open circuit protection, THD < 10% ,				

	P.F.≥0.95, IP20, CRI >80,UGR (Unified Glare Rating) < 19, Flicker free, (flicker should be below 5 %), life time (LED, Driver & electrical circuitry), of minimum 50000 Burning Hours with, 70% of initial Lumen maintained till life ends as per LM80 extrapolation IES TM-21-11 report, CCT 3000°K / 4000°K / 5700°K /6500°K (As per ANSI Bin), SDCM(Standard Deviation Colour Matching) <3, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard. Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. complete n all respect i/c external connections with 1.5 sq mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy ≥105 <120 lm/Watt output . LM79 & LM80 Test report and all testing required for LED fixtures as per.				
	BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C). Powder coated die cast /Extruded aluminium Body (Thickness > 1.20 mm)				
8.1	36 watt	15	Each	2508.00	37620.00

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

9	Supplying, installation, Testing & Commissioning of LED fitting Surface/Suspended Linear Light Extruded Aluminium housing with powder coated die cast end cap High Transmittance Diffused PS/Prismatic Diffuser with IK02, Housing should have Nano Technology Powder Coating for Corrosion Resistance,. Electrical Insulation Class 1, built in Constant Current flicker free driver, Operating voltage AC 220- 240 Volt, freq 50/60hz, Operating temp range 0 deg to 35 deg centigrade, internal surge protection of 3KV and Additional protection SPD of 6KV with Short & Open circuit protection, THD<10%, P.F.≥0.95, IP20, CRI>80, life time of minimum 50000 Burning Hours with, 70% of initial Lumen maintain life ends, 3 SDCM, CCT 3000K/4000K/ 5700K (As per ANSI Bin), Maximum lumen should not be more than the 2400 lumen and Fixture shall be of BIS standard, EMI/EMC Compliant OEM must have its own in house NABL lab setup for all testing facilities for LED fixtures. "Complete in all respect /connections with 1.5 sqmm FRLS, PVC insulated copper conductor single core cable and earthing etc. as required", (LM79 & LM80) certificate/Report from OEM shall be submitted, Minimum 5 years OEM warranty, Shape size and CCT shall be as approved by Engineer-in-charge. System lumen efficacy> 100lm/Watt output, All as per pre approved by Engineer-in-charge.	15	Each	3685.00	55275.00
	SH-II VPS System				

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

10	Online UPS- Input supply: Three Phase, Output supply: Three Phase.Supplying, installation, Testing & Commissioning of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 0C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swapable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of modules required for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch along with provision for manual bypass, suitable isolation transformer for additional protection against neutral faults etc. UPS shall have inbuilt phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate. Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant Inter-national standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads.				

	Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication RS232/RS485/SNMP port Voltage, Capacity. e) Load: KVA, KW, Percentage. f) Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like :Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc.				

	h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load / UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over ,Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location etc open protocol for BMS integration, all hardware & software for iOT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current. d) Battery:				
10.1	20KVA (Each Power module shall be < 10 KVA)	1	Each	341772.00	341772.00
SH-III LAN , EPABX System					
11	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	3	Each	5278.00	15834.00
12	Supplying, Installation, Testing and commissioning of following CAT6A Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.				
12.1	Copper Patch Cords of length 1m (3ft)	72	Each	173.00	12456.00
12.2	Copper Patch Cords of length 3m (10ft)	60	Each	405.00	24300.00

13	Supplying, Installation, Testing and commissioning of CAT6A Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	60	Each	302.00	18120.00
14	Supplying, implementation, install , Testing and commissioning of 200 users Firewall with 24x7 Unified Threat Protection Support includes Comprehensive Support, Advanced Hardware and Botnet IP/Domain, Mobile Malware Service, Web Filtering, Antispam, including Virus Outbreak and Content Disarm & Reconstruct Services with 5 years subscription etc as required. Firewall should have min 8x 1GE RJ45, 2x 10GE SFP + slots & 4x 10GE SFP+ , concurrent sessions of min 10 million, new sessions / Sec of min 150,000. Firewall should support Threat Protection Throughput of min 2.6 Gbps, & SSL Inspection throughput of min 3Gbps etc complete as required by Client/ CPWD or decision of engineer in charge	1	JOB	553482.00	553482.00
15	Supplying, drawing, Testing and commissioning of Cat 6A UTP 4 pair, 23 AWG solid copper cable in existing conduit/ on surface, U/FTP, LSZH, Non Plenum, Horizontal (solid) Cable suitable for high speed data networking application supporting up to 10Gbps over a 100 meter channel. The 4 Unshielded Twisted Pairs (UTP) cable with colour coded insulation for easy identification should have FLAME PROPERTIES i.e. Flammability Test - IEC 60332-1, Smoke Density - IEC 61034, LSZH standards compliance: ANSI/TIA-568 C.2, ISO/IEC 11801, IEEE 802.3an, RoHS. Delay Skew should be < 45NS. The outer Cable Diameter should be 7.5 + 2 mm. Cable should have been tested and verified by UL/ ETL etc. complete as required.				
15.1	1 Run of cable	800	Meter	74.00	59200.00
15.2	2 Run of cable	500	Meter	124.00	62000.00
15.3	3 Run of cable	300	Meter	174.00	52200.00
15.4	4 Run of cable	100	Meter	224.00	22400.00

16	Access Control System with Face recognition Supplying, Installation, Testing and Commissioning of Access Control System comprising of Face and fingerprint Recognition, Smart Card, QR Code, NFC & PIN Code based Reader, following sizes of 5" IPS TFT Touch Screens, 1GB RAM, 8 GB ROM, Live Face Detection with anti-spoofing against 2D photograph, mobile selfie & video, Fake Fingerprint and face Detection Technology, 30,000 Face storage (1:N) /, 3,000 fingerprint (1:N), QR code 30,000, 30,000 card storage (1:N), 2 lakh transaction storage, 20,000 image logs, onboard dual camera (colour & IR) Primary camera min 2MP, Support authentication & verification from up to 1 meters, Communication protocols WiFi, TCP/IP, Wiegand Out, Wiegand IN, USB, MQTT protocol, Blacklist Employee Management, User wise authentication modes; Built in Lock Control, Mask Detection & Alert (configurable), 40 to 30,000 lux illumination, IP65 for Ingress Protection, Certification: CE, FCC, BIS, ROHS, etc. Metal Enclosure with battery backup, suitable for mounting on metalsurface/metal frames/ wooden frames/wall/flap barriers including all mounting bracket & accessories complete etc. as required. All connection outgoing is in scope of work.				
16.1	5" IPS TFT Touch Screen	1	Each	58306.00	58306.00
17	Reinstallation of existing PANASONIC EPABX System (model no :- TES824) & CCTV System with five number bullet / PTZ Camara as per requirement including connection and all required wiring , accessories etc. complete as required for NTRO office area only ETC complete as required	1	Job	9142.00	9142.00
18	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
18.1	Telephone socket outlet	30	Each	168.00	5040.00
	SH-IV (HVAC System)				

19	Supplying, laying/ fixing, testing and commissioning of following nominal sizes of chilled water piping inside the building (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with 80 kg/cum density resin bonded fibre glass or 144 Kg/ cum density mineral wool (non Combustible) pipe section insulation covered with a layer of 120 gm/sqm polythene sheet (vapour barrier) and finally applying 0.63mm aluminium sheet cladding complete with type3 , grade 1 roofing felts trip(as per IS:1322 as amended up to date) at joints and repairing of damage to building etc. as per specifications and as required. ote: The Pipes of sizes 150mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above150mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35mm thick M.S. Sheet for pipes up to 350 mm dia. and from minimum7mm thick MS sheet for pipes of 400 mm dia and above.				
19.1	65mm dia.(50mm thick insulation)	10	Meter	2854.00	28540.00
19.2	50mm dia.(50mm thick insulation)	25	Meter	2373.00	59325.00
19.3	40mm dia. (50mm thick insulation)	25	Meter	2018.00	50450.00
19.4	32 mm dia (50mm thick insulation)	25	Meter	1763.00	44075.00
19.5	25 mm dia (50mm thick insulation)	25	Meter	1602.00	40050.00

20	Supplying, Installation, Testing and Commissioning of Air Cooled Cassette type Air conditioners complete with Indoor unit(IDU), Out door unit (ODU), R-32/R410A/R-407 Green Refrigerant, wireless Remote, inbuilt drain pump, suitable for 400/230V, 50 Hz ,1 /3 phase AC supply, including surface / concealed copper Refrigerant piping with insulation (closed cell elastomeric nitrile rubber tubular pipe section) upto 5.5 Mtr (IDU to ODU), copper power and control cable up to 5.5 Mtr (IDU to ODU) including drain pipe, the system shall be capable of performing cooling, dehumidification, Air circulation, filtration & ventilation of following capacity with Scroll/rotary compressor with min 5 year Original Equipment Manufacturer (OEM) warranty both compressor and Printed Circuit Board (PCB) as specified. The system shall be able to deliver 100% of the rated capacity as per relevant IS Code. The lab testing reports as per IS: 1391 shall be submitted from National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited as per International Electrotechnical Commission (IEC) 17025standards/Central Power Research Institute (CPRI)/ Electrical Research and Development Association (ERDA) with Original Equipment Manufacturer (OEM) etc. complete as per CPWD specification and as per IS: 1391 as required.				
20.1	2.0 TR with 5 Star BEE Rating	2	Each	85731.00	171462.00
21	Supplying, installation, balancing and commissioning of factory fabricated GSS sheet metal rectangular/ round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports, bends, transitions, reducers, end caps, collars etc as required complete in all respect in confirmation to IS : 655 and approved drawings and specifications of following sheet thickness complete as required.				
21.1	Thickness 0.63 mm sheet	100	sq.m	1191.00	119100.00
21.2	Thickness 0.80 mm sheet	15	sq.m	1382.00	20730.00
21.3	Thickness 1.00 mm sheet	10	sq.m	1488.00	14880.00
22	Supplying and fixing suitable size Gl / Surface PVC box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	6	Each	659.00	3954.00

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

23	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.				
23.1	375 mm width X 50 mm depth X 2.0 mm thickness	10	Mtr	1116.00	11160.00
23.2	300 mm width X 50 mm depth X 1.6 mm thickness	10	Mtr	866.00	8660.00
23.3	200 mm width X 50 mm depth X 1.6 mm thickness	10	Mtr	775.00	7750.00
24	Supplying, installation, testing and commissioning of GI volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc in confirmation to SMACNA/IS and as per specifications complete etc. as required.	10	Sqmt.	7580.00	75800.00
25	Supply, installation, testing and commissioning of Motorized (ON-OFF Type) duct mounted GI volume control damper with enthalpy sensor and necessary control wire for integration within AHU room complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc in confirmation to SMACNA/IS and as per specifications complete etc. as required.				
25.1	Damper	10	Sqmt.	18377.00	183770.00
25.2	Actuator	5	Each	9793.00	48965.00
26	Supplying, Fixing, installation, testing and commissioning of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers in confirmation to SMACNA/IS and as per specifications complete etc. as required.	15	Sqmt.	9623.00	144345.00
28	Supplying, Fixing, installation, testing and commissioning of supply air diffusers of powder coated aluminium with aluminium volume control dampers with anti smudge ring & removable core in confirmation to SMACNA/IS and as per specifications	10	Sqmt.	12841.00	128410.00

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

	complete etc. as required.				
29	Supplying, Fixing, installation, testing and commissioning of Return air diffusers of powder coated aluminium without volume control dampers with anti smudge ring & removable core in confirmation to SMACNA/IS and as per specifications complete etc. as required	10	Sqmt.	8595.00	85950.00
30	Supplying, Fixing, testing and commissioning of fire dampers of minimum 90 minutes fire rated in supply air duct/main branch and return air path as and where required of required sizes i/c control wiring, the damper shall be motorized and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored. The spring return action shall be inbuilt mechanism and not externally mounted. The damper shall also be closed in the event of fire signal and, in confirmation to IS and as per specifications complete etc. as required.				
30.1	Fire Damper	5	Sqmt.	11355.00	56775.00
30.2	Actuator	5	Each	10645.00	53225.00
31	Supplying and fixing of following thickness duly laminated aluminium foil of mat finish closed cell Nitrile rubber (Class "O") insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required. above.				
31.1	19 mm	150	Sqmt.	810.00	121500.00
31.2	25 mm	25	Sqmt.	1033.00	25825.00
32	Supplying & fixing of PVC insulated and PVC she ahed / XLPE power cable of 1.1 KV grade on surface of following size etc complete as required				
32.1	3.5 x 25 Sq. mm Al. Armoured cable	50	Mtr	505.00	25250.00
33	Supply and Installation of Canvass connection for AC/ ductable units at outlet/ inlet of Unit etc complete as reqd.	3	No.	6236.00	18708.00

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

34	Supplying and drawing of 2C X 0.75 sq.mm Round/Strip PVC Outer Sheathed and Overall sheilded communication cable in the existing surface/ recessed steel/ PVC conduit etc complete as required	200	Mtr	167.00	33400.00
35	CASSETTE FAN COIL UNIT Supplying, installation, testing and commissioning of Chilled Water Ceiling Suspended Hydronic Cassette type fan coil unit, four(4) way directional flow, low noise, each complete with two(2) rows of deep chilled water cooling coil, multi-blade centrifugal fan, test reports from National Accreditation Board for Testing and Calibration Laboratories (NABL)/AHRI accerdited lab, electronic air cleaning system, required set of ball valves with & without strainers & 2 way Motorized valve, insulated condensate drain pans with drain pump assembly & drain pump failure alarm, pipe connections through copper pipes, Infra-red remote control, Liquid Crystal Display (LCD), four (4) speed motor , fan four(4) direction air flow, auto swing louver, decorative panel etc., condensation drain connections, All units shall be suitable for 220 +/- 10% Volts, 50 Hz, single phase power supply etc. complete as per specification. The wireless Remote temperature control / thermostat shall have memory back up for set point re-store in case of power failure and re-start. Four(4)hanger rods with required anchoring fasteners, hooks, washers etc.complete as per CPWD specification and as directed by Engineer-in-charge. * Provision of Fresh Air ducting should be provided				
35.1	4.0 TR nominal capacity with 1600 CFM air quantity.	4	Each	46817.00	187268.00
35.1	3.0 TR nominal capacity with 1200 CFM air quantity.	2	Each	24049.00	48098.00
36	Supplying, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for HVAC system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastometric nitrilerubber tubular sleeves sections of 19 mm thick insulation as givenbelow for Suction and Liquid lines, all accessories as per specifications etc. as required :				
36.1	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm	25	Meter	256.00	6400.00
36.2	9.5 mm dia (OD) (Soft drawn) with tube	30	Meter	346.00	10380.00

	thickness 1.2 mm				
36.3	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm	25	Meter	487.00	12175.00
36.4	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm	25	Meter	615.00	15375.00
36.5	19 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm	25	Meter	739.00	18475.00
37	CEILING SUSPENDED AHU Supplying, Installation, testing and commissioning of Factory built ceiling suspended chilled water double skin type horizontal/vertical air handling units of following capacity, made of 25mm thick panels consisting of pre plasticized G.I. casing of thickness 0.8mm outside layer and 0.8 mm inside layer with Polyurethane Foam (PUF) insulation factory injected between them by injection moulding machine, complete with blower section with blower suitable for static pressure as required, minimum 2 bend PVC eliminators, cooling coil section with aluminium finned copper tubes (tubes thickness not less than 0.5mm) cooling coil of 4 row deep, filter section with 50mm thick metal viscous/ washable synthetic type air prefilters, belt drive package with Totally Enclosed Fan Cooled (TEFC) drive motor of efficiency class IE3 suitable for 415 ± 10% volts, 50Hz, 3 Phase AC supply suitably designed for Variable Frequency Drive (VFD) applications, drain connections, stainless steel (18G) drain pan with PUF insulation, 150 mm dia. dial type pressure gauges (2nos.)and industrial type thermometres (2 nos.) at the inlet and outlet of coil, auto purge valve wherever required, necessary vibration Isolation arrangement, noise level shall not exceed 70 dB. AHU shall be AHRI/Eurovent certified, fan shall be AMCA certified etc.Complete as per CPWD specification/drawings and as directed by Engineer-in-Charge. (Total staticpressure considered.				
37.1	4000 CFM	2	Each	116036.00	232072.00
38	Fabrication, Supplying, Installation, testing and commissioning of starter panel (star delta), outdoor type, double door suitable to operation on 415 V, 3 phase, 50 Hz AC supply having 63A, TP, 10kA MCB, auxiliary contact NO-NC, overload relay, Auto start switch, 3 position selector switch for SPP Auto / SPP Manual,auto/manual selector, star-delta timer switch RYB LED Indicator Motor ON & Trip LED indicator, TC 'C' curve MCB for short circuit protection. i/c connection etc. complete as required.Panel shall be suitaible for AHU of HVAC system	2	Each	81329.00	162658.00

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

39	Supplying and fixing of following size GI raceways made out of corrosion resistant pre-galvanized sheet with thickness of 1.6 mm for distributing power/LV cabling in screed floors installations along with accessories like couplers, fixing bracket etc by fastening them to the existing flooring suitable for applications etc as required.				
39.1	100 X 25 mm	15	Meter	1455.00	21825.00
39.2	100 X 38 mm	15	Meter	1726.00	25890.00
39.3	150 X 25 mm	20	Meter	1964.00	39280.00
39.4	225 X 25 mm	20	Meter	3080.00	61600.00
39.5	300 X 25 mm	30	Meter	3903.00	117090.00
39.6	300 X 38 mm	20	Meter	4288.00	85760.00
40	Supplying and fixing of following sizes of height adjustable GI/metallic lid Junction boxes with powder coated lid and frame for direct access to cables at the intersection of raceways complete with base and cover plate i/c fastening them to the existing flooring etc as required.				
40.1	150 X 150 X 50 mm	15	Nos.	2529.00	37935.00
40.2	225 X 225 X 50 mm	10	Nos.	3106.00	31060.00
40.3	300 X 300 X 50 mm	30	Nos.	4041.00	121230.00
41	Y - STRAINER of Ductile CI Body flanged ends with stainless steel strainer for chilled/ hot water circulation including insulation as specified.				
41.1	65mm dia.	1	Each	8644.00	8644.00
41.2	50mm dia.	3	Each	6459.00	19377.00
41.3	40mm dia.	3	Each	4836.00	14508.00
42	BUTTERFLY VALVE (MANUAL) with C I body SS Disc, Nitrile Rubber Seal & O- Ring PN 16 pressure rating for chilled water/hot water circulation as specified				
42.1	65mm dia.	6	Each	5086.00	30516.00
42.2	50mm dia.	6	Each	4627.00	27762.00
42.3	40mm dia.	6	Each	3906.00	23436.00
43	BALANCING VALVE WITH BUILT IN MEASURING FACILITY with C I body flanged construction with EPDM coated disc with long pitch with protected out pipe insulation & PN 16 pressure rating for chilled / hot water circulation as specified.				
43.1	65mm dia.	3	Each	13202.00	39606.00
43.2	50mm dia.	3	Each	11524.00	34572.00
43.3	40mm dia.	3	Each	8200.00	24600.00

44	Supplying, Installation, testing and commissioning of ceiling suspended DX TYPE treated fresh air unit with hermetically sealed twin rotary / Scroll compressor, 3 phase, 50 Hz, 380/420 volt supply unit should be operational upto ambient temperature of 52 degree celcius , external static pressure should be minimum 8 pa; indoor with DIDW Fans; 3 no of speed option etc.complete as required of following capacity				
44.1	600 CFM	1	Each	1,19,851.00	119851.00
SH-V (AV System)					
45	Supply, installation, testing and commissioning of 86-inch Interactive Flat Panel Display with 4K UHD (3840 × 2160) IPS LCD panel with LED backlight, minimum 400 cd/m² brightness, 1200:1 contrast ratio, 178° viewing angle, 8 ms or better response time, anti-glare toughened glass (7H hardness or higher), Infrared (IR) touch technology supporting minimum 40 simultaneous touch points, touch accuracy ±1 mm or better, touch response time ≤10 ms, Android 14 or higher with minimum Octa-Core processor, 8 GB RAM, 64 GB internal storage, 20 W × 2 integrated speakers, connectivity comprising 3 × HDMI, 1 × USB Type-C (video/touch/data/PD), 1 × LAN, 1 × RS-232, 1 × Audio-In, 1 × Audio-Out, 1 × OPS slot, built-in Wi-Fi and Bluetooth, wireless screen sharing compatible with Windows, Android, macOS, iOS, ChromeOS and Linux, integrated whiteboard software supporting multi-colour pen, handwriting recognition, shape recognition, text insertion, screen recording, split screen, PDF/Office import-export, complete with wall mount, stylus pens, remote control and all accessories	1	Each	3,04,419.00	304419.00
46	Supplying, Installation, Testing and commissioning of Cable Cubby manual Aluminium table mount male to female cable cubby with HDMI,USB 3.0, USB-C, LAN, Power cablesfor table connectivity in the existing furniture etc. as required.	5	JOB	58,455.00	292275.00

47	Supplying, Installation, Testing and commissioning of HDMI extenders TX of AVoIP Encoder supporting Full HD @60 fps, should have 1 x HDMI Input & Output with USB Type C.Encoder should have a tally light which indicates that the camera is live, while the IP signal is transmitted to decoders, computers or streaming platforms. Encoder should have feature of a pass thru HDMI output. Encoder should support NDI HX3 with Low Latency & High Quality Video Distribution etc. as required.	3	JOB	1,51,645.00	454935.00
48	Supplying, Installation, Testing and commissioning of HDMI extenders RX of AV Bridge supporting simultaneous outputs through HDMI 2.0, USB Type C & USB Type A with Line Out & 3.5 mm, 1x Line In & 3.5 mm. The decoder should be capable to decode Dante AV-H & RTSP with HDMI and USB out supporting all video and audio routing and configuration managed by Dante applications. The device should encode IP video streams from RTSP and Dante AV-H to UVC/UAC-compliant USB for use with any soft video conferencing platforms. etc. as required.	3	JOB	1,51,645.00	454935.00
49	Supplying, Installation, Testing and commissioning LED NAME SIGN/BACK LIGHT LOGO on WALL with all mounting accessories as per client requirement etc as required	1	JOB	28,239.00	28239.00
50	Supplying, Installation, Testing and commissioning of 20 L WATER DISPENSER with accessories etc complete as required	2	JOB	9,190.00	18380.00
51	Supplying, Installation, Testing and commissioning of 2.2 KW ELECTRIC INDUCTION with touch panel for official purpose etc as required	1	JOB	3,321.00	3321.00
	SH - VI Safety Officer , Fire NOC & OC				
52	Providing the services of a Safety Officer for day-to-day in working time for safety management at the site including uniform/helmet etc as required , the safety officer will purform the duty as whenever required or directed by the Department/NTRO/IITB, complete in all respects as per the enclosed terms and conditions.	120	Per Day	1,403.00	168360.00

53	Providing services of liasonong with local body for taking approval of Fire NOC , OC, etc with submission drawing to local body and other approvals for completion of work including all MEP working drawings including HVAC Drawings drawing etc complete as required and as per EIC.	1	JOB	5,82,492.00	582492.00
54	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps modular switch, connection etc. as required. (For light plugs to be used in non residential buildings).	87	Nos	545.00	47415.00
	Total				₹ 77,58,891.00
	Say				₹ 77,58,891.00

1	SH-I (Internal EI)	₹ 9,16,091.00
2	SH-II (UPS System)	₹ 3,41,772.00
3	SH-III (LAN , EPABX System)	₹ 8,92,480.00
4	SH-IV (HVAC System)	₹ 32,53,777.00
5	SH-V (AV System)	₹ 15,56,504.00
6	SH - VI Safety Officer , Fire NOC & OC	₹ 7,98,267.00
	Total	₹ 77,58,891.00

EXECUTIVE ENGINEER & SM (E&M)
MPC-II, CPWD, MUMBAI-37

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)

PART – E
PRICE BID

Central Public Works Department

NIT No. 10/ NIT/EE & SM (C) II/SE cum PD/ MPC-II/2026-27

Name of Work: - Interior Furniture work , Internal flooring, partition, false ceilling including electrical work, HVAC,CCTV, Audio,Video, Fire Alarm etc for National Critical Information Infrastructure Protection Center at 5th floor IITBRP Building, Mumbai.

PRICE BID

Name of the Contractor					
Sr. No.	Name of component	Estimated cost	Percentage above or below the estimated cost	% in Figures	Total Cost
1	Civil and Furniture Works	96,24,597/-			
2	E & M Works	77,58,891/-			
	GRAND TOTAL	1,73,83,488/-			
	GRAND TOTAL IN WORDS (One Crore Seventy Three Lakh Eighty Three Thousand Four Hundred Eighty Eight Only)				

Executive Engineer And Senior Manager (C)-II,
O/o SE CUM PD, MPC-II ,
CPWD, MUMBAI – 37.

Insertion : Nil Correction : Nil Omission :Nil

AE (C)/AE (E&M) EE& SM (C)/EE & SM (E&M)