NIT– INDEX

Name of Work: ***Renovation of Water Supply, Sanitary, Drainage System, Reconstruction of Damaged Compound Wall and External Painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work***

Sl. No.	*Content*	*Page*
1	**PART -A**	**1-33**
2	Information and instructions for contractors for e- tendering	2-5
3	CPWD-6 for e-tendering	6-15
4	FORM "K" & "F"	16-17
5	Brief Particulars of work (Section -I)	18
6	FORM 'C'	19
7	C.P.W.D – 7	20-22
8	Schedules A to F - Civil Component	23-30
9	Time Schedule for Handing Over of Quarters and Execution of Renovation Works	31
10	Form for Bank Guarantee for Earnest Money Deposit/ Performance Guarantee/Security Deposit/Mobilization Advance [Annexure I]	32-33
11	**PART-B**	**34-116**
12	Special conditions for Civil works	35-58
13	Additional conditions (Civil component)	59-69
14	Particular Specifications (Civil component)	70-105
15	FORM "H"	106
16	List of Field Tests	107
17	Guarantee Bonds.	108-109
18	List of Preferred brand / Manufacturer/ Make (Civil component)	110-116
19	**PART C**	**117-160**
20	Schedule A to F (E&M component)	118-125
21	Particular Specifications, Special conditions & Eligibility criteria for E&M works (Section-II)	126-135
22	Special conditions for all specialized / E & M components	136-137
23	Annexure "X" &" Y"	138-139
24	Form "G", "H", "I"	140-143
25	Memorandum of Understanding (MOU) for Associated Contractor	144-145
26	Additional condition of contract & specifications for E & M works	146-152
27	Commercial & Technical conditions for Internal electrical installations	153-158
28	List of Preferred Makes	159-160
29	**PART- D**	**161-190**
30	Schedule of Quantities (Civil Component)	162-180
31	Schedule of Quantities (Electrical Component)	181-190

PART-A

INFORMATION AND INSTRUCTIONS FOR CONTRACTORS FOR e-TENDERING

NOTICE INVITING e-TENDER

The **Executive Engineer, CPWD - Calicut, MS Baburaj Road, Kallai, Calicut-673 003** on behalf of President of India invites online percentage rate bids from CPWD enlisted contractors of appropriate class in Buildings & Roads category, for the following work(s):

Table 1: Brief Particulars and Timelines

	Particulars	Particulars
1	NIT No.	**42/SE/EECLT/2026-2027**
2	Name of work & Location	**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work**
3	Estimated cost put to tender (In Rs.)	**Rs. 1,76,73,915/-** **(Civil – Rs. 1,60,50,467/- + E&M - Rs. 16,23,448/-)**
4	Earnest money (In Rs.)	**Rs. 3,53,478/-**
5	Stipulated period of completion of work	**07 (Seven) Months**
6	Last date & time of submission of bid, copy of receipt for deposition of original EMD and other documents as specified in the bid document	**02.12.2026 up to 15:00 Hrs**
7	Date & time of opening of tender.	**02.12.2026 on 15:30 Hrs.**
8	Last date & time of submission of hard copies of Experience certificates if any, Registration Certificates, Affidavit if any, Undertaking and other documents as specified in the NIT to Division office by the Lowest Tenderer only.	**To be submitted during office hours within a week from the date of opening of Financial Bid. In case the last day happens to be closed holiday, these documents shall be submitted on the next working day.**

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 Master plan, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from websitehttps://etender.cpwd.gov.in or www.cpwd.gov.in free of cost.
4. But the bid can only be submitted after deposition of original EMD either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission and uploading the mandatory scanned documents such as Insurance Surety Bonds or Account Payee Demand draft or Banker's Cheque or Fixed Deposit Receipts or/and Bank Guarantee including e-Bank Guarantee (for balance amount as prescribed) from any of the Commercial Bank towards EMD in favour of Executive Engineer as mentioned in NIT, receipt for deposition of original EMD to division office of any Executive Engineer (including NIT issuing EE/ AE), CPWD and other documents as specified. A part of earnest money (EMD) is acceptable in the form of bank guarantee also. 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. 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-step process are available on download section of https://etender.cpwd.gov.in.
5. The intending bidder must have valid class-III digital signature certificate with encryption key (combo type) to perform any operations / transactions on the e-tendering portal / website and the bidder should download and install the eMsigner on their system as per instructions available on download section of https://etender.cpwd.gov.in.
6. On opening date, the contractor can login and see the bid opening process. After opening of bids, he will receive the competitor bid sheets.
7. Contractor can upload documents in the form of JPG format and PDF format.
8. a) The contractor must ensure to quote rate in the prescribed column(s) meant for quoting

   rate in figures appears in yellow colour and the moment rate is entered; it turns sky blue.

   b) Tenderer shall quote the percentage rate above or below two places of decimals only.

   c) The tenderer shall quote only one overall percentage rate above or below on the designated place, which shall be applicable on Civil and E&M components.
9. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0" (ZERO). However, if a bidder

quotes nil rate, the bid shall be treated as invalid and he will not be considered as lowest bidder

a) 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.

b) It is mandatory to upload scanned copies of all the documents including GST registration. If documents are not uploaded, then bid will become invalid and shall summarily be rejected.

c) Please read point No. 9 of CPWD-6 for further details.

10. Tenders with any condition including that of conditional rebates shall be rejected forthwith.

11. The Subject work is targeted for compliance with 3 Star GRIHA rating. In order to achieve these ratings, a high degree of responsibility and cooperation is necessary from the contractors. All materials and systems used in the project are intended to maximize energy efficiency for operation of Project throughout service life (substantial completion to ultimate disposition – reuse, recycling, or demolition) with an emphasis on top quality Materials and systems are to maximize environmentally-benign construction techniques, including construction waste recycle, reusable delivery packaging, and reusability of selected materials. All vendors / contractors must adhere to best practices related to Green Buildings. Other than the general guidelines outlined here, all vendors/contractors will be furnished with a supplementary set of guidelines more specific to their nature of service/product. Nothing extra shall be paid for the same, unless specifically provided in any item.

12. This work requires engaging more than 20 nos. of labours / workers and therefore all necessary licenses such as labour license, EPFO and ESI, BOCW welfare registration etc., shall be taken by contractor within the time limits as prescribed under clause 1 of schedule ‘F’

13. The Department reserves the right to reject any prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criteria.

14. Contractor shall not divert any advance payments or part thereof for any other purpose other than needed for completion of the contracted work. All advance payments received as per terms of the contract (i.e., mobilization, secured against materials brought at site, secured against plant & machinery and / or for work done during interim stages, etc.) are required to be re-invested in the contracted work to ensure advance availability resources in terms of materials, labour, plant & machinery needed for required pace of progress for timely completion of work.

15. Any dispute arising out of this tender including dispute related to encashment of any Bank Guarantee/ FDR etc., shall be subject to the jurisdiction of courts of Kerala State only.

16. **List of Mandatory Documents to be scanned and uploaded within the period of bid submission:**

1.	Insurance Surety Bonds/ Account payee Demand Draft/ Fixed Deposit Receipt (FDR)/ Banker's cheque or Bank Guarantee (as prescribed) issued by a Commercial Bank against EMD, as specified in Para 7 of CPWD – 6 for e - Tendering.
2.	Enlistment order of the Contractor
3.	GST registration certificate of the State in which the works is to be taken up, if already obtained by the bidder. If the bidder has not obtained GST registration as applicable, then he shall scan and upload following undertaking along with bid documents. "If work is awarded to me, I/we shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any Payment by CPWD, whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/or for any action taken by CPWD or GST department in this regard".
4	Receipt for deposition of original EMD issued from division office of any Executive Engineer (Including NIT issuing EE, CPWD) (Form–C).
5	Declaration about site inspection (Form 'K')
6	Undertaking on structural stability and soundness of already completed buildings and infrastructure projects (Form 'F')
7	Copy of ERP Training Certificate issued through LMS (Learning Management System) module in ERP.

If any mandatory document listed above is not scanned and uploaded while submitting bid, the bid submitted shall become invalid and will not be considered in e-Tendering process and the bid shall be summarily rejected. It is the duty of bidder to ensure that documents shall be fully legible.

Executive Engineer
CPWD, Calicut

CPWD-6 for e-TENDERING

1. Percentage rate tenders are invited on behalf of President of India from CPWD enlisted contractors of appropriate class in Buildings & Roads category for the work of "**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work.**"
The enlistment of the contractors should be valid on the last date of submission of tenders.

In case the last date of submission of tender is extended, the enlistment of the contractor should be valid on the original date of submission of tender

1.1 The work is estimated to cost **Rs. 1,76,73,915/- (Civil – Rs. 1,60,50,467/- + E&M - Rs. 16,23,448/-).** This estimate, however, is given merely as a rough guide.

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

1.1.2 **The Minimum Eligibility Criteria for Associated Agencies For E&M Components**

Note: 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 last date of submission of tender. For other conditions, refer special conditions specified in Part C.
The applicant shall 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 as given in this tender document and submit the details as per Annexure-4A in Part C of this tender document within 30 days of award of work OR before start of minor component of work whichever is earlier.

S.N.	COMPONENT OF E&M WORKS	ESTIMATED COST	ELIGIBILITY
I	ELECTRICAL INSTALLATIONS	Rs. 16,23,448/-	If the main contractor does not possess valid Electrical license of appropriate class/voltage for executing the work then, he shall associate with eligible class registered contractor, possessing valid Electrical Contractor License of

S.N.	COMPONENT OF E&M WORKS	ESTIMATED COST	ELIGIBILITY
			appropriate Class/Voltage issued by competent authority and fulfilling the following eligibility criteria of having successfully completed during last seven years ending up to previous day of last date of submission of tender as given below with completion certificate issued by an officer not below the rank of Executive Engineer or equivalent duly attested. Three similar works each of value not less than **Rs. 6.49 Lakhs** OR Two similar works each of value not less than **Rs. 9.74 Lakhs.** OR One similar work of value not less than **Rs. 12.99 Lakhs.** **Similar works means: "SITC of Internal/External Electrical Installations works"**

1.1.3 **The Minimum eligibility criteria for Specialized work for Civil and E & M Works**

Note: 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 last date of submission of tender. For other conditions, refer special conditions specified in Part C.

The applicant shall 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 as given in this tender document and submit the details as per Annexure-4A in Part C of this tender document within 30 days of award of work OR before start of minor component of work whichever is earlier.

Civil Work:

Sl. No.	Specialized work(s)/ item of work (s)	Estimated Cost	Eligibility

1.	Water proofing treatment works	Rs. 5,18,347/-	The main contractor shall have to associate with agency fulfilling the following eligibility criteria having successfully completed during last seven years ending up to previous day of last date of submission of tender as given below with completion certificate issued by an officer not below the rank of Executive Engineer or equivalent duly attested. Three similar works each of value not less than **Rs. 2.07 lakhs** OR Two similar works each of value not less than **Rs. 3.11 lakhs** OR One similar work of value not less than **Rs. 4.15 lakhs** **Similar works means: "Execution of Water proofing treatment works"**

Note:

a) The main contractor shall submit name and credentials w.r.t. meeting eligibility criteria for E & M works, he proposes to associate for the E & M work(s). The approval of E & M agency shall be given by Engineer-in-charge of work. The Contractor and the associated E & M agency shall give required affidavit to confirm their association.

b) However, the contractor shall also be eligible to carry out himself any or all of these works without associating any agency provided:

(i) He fulfils the prescribed eligibility criteria respectively for these work(s). or

(ii) He directly procures the equipment of approved make from manufacturer and get it installed from authorised agency/service provider of the manufacturer or E & M agency as per criteria mentioned above.

c) Contractor has to submit Bank Guarantee or Guarantee for these items for specific mentioned period. Proforma is given hereinafter. If no Performa is available, same shall be approved by Engineer in charge.

d) Wherever work is specified to be done or material procured through E &M agencies, their names shall be got approved well in advance from Engineer- in-charge of relevant component. Failure to do so shall not justify delay in execution of work. It is suggested that immediately after award of work, contractor should negotiate with concerned E & M agencies and send their names for approval to

Engineer-in-charge. Any material procured without prior approval of Engineer- in-charge in writing is liable to be rejected. Engineer- in-charge reserves right to get the materials tested in laboratories of his choice before final acceptance.

e) 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 last date of submission of tender. For other conditions, refer special conditions specified in Part C.

f) The applicant/ main contractor has to submit consent letters from at least one eligible associate agency of the respective component within 15 days of award of work OR before start of minor component of work whichever is earlier. The main contractor will submit Affidavit of MOU signed with eligible associated contractor. The Affidavit of MOU shall be signed by both contractors, Main contractor as 1st party and associated contractor as 2nd party, independently for "**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work.**" Specified as above.

g) If the main contractor fails to associate agency for execution of minor components of work within 15 days of award of work OR before start of minor component of work whichever is earlier or furnishes incomplete details or furnishes details of ineligible agencies even after the tenderer is given due opportunity, the entire scope of such component of work shall be withdrawn from the tender and the same shall be got executed by the Engineer-in–Charge at the risk and cost of the main contractor.

h) Verifiable completion certificates of the work, registration/approval documents, self-attested GST registration documents in respect of the associated agencies as the case may be, duly attested by the applicant shall be submitted within 15 days of award of work OR before start of minor component of work whichever is earlier.

i) Self-attested GST registration documents in respect of the associated agencies shall be submitted within 15 days of award of work OR before start of Specialized / minor component of work whichever is earlier.

2 Agreement shall be drawn with the successful bidders on prescribed Form No. **CPWD 7/8** (or other Standard Form as mentioned) which is available as a Govt. of India Publication and also available on website **www.cpwd.gov.in**. Bidders shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.

3 The time allowed for carrying out the work will be **07 (Seven) Months** from the date of start as defined in Schedule 'F', or from the first date of handing over of the site, whichever is late in accordance with the phasing, if any, indicated in the tender documents.

4 The site for the work is available.

5 The bid document consisting of specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions

of Contract Form can be seen on website https://etender.cpwd.gov.in or www.cpwd.gov.in free of cost.

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

7 While submitting the revised bid, the contractor can revise the consolidated percentage rate any number of times (he need not re-enter percentage rate of all the schedules or sub heads) but before last time and date of submission of tender as notified.

8 Earnest Money in the form of Insurance Surety Bonds or Account Payee Demand Draft, Fixed Deposit Receipt, Bankers Cheque or Bank Guarantee including e-Bank Guarantee (for balance amount as prescribed) from any of the Commercial Banks (drawn in favour of **The Executive Engineer - CPWD, Calicut** shall be scanned and uploaded on the e-Tendering website within the period of bid submission. The original EMD should be deposited either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving Executive Engineer (including NIT issuing EE/AE) shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT.

A part of earnest money is acceptable in the form of bank guarantee also. In such case, minimum 50% of earnest money or Rs. 20 lac, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee including e-Bank Guarantee of any Commercial bank having validity for a period of 90 days for single bid works and 180 days for two bid system or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders. The earnest money given by all the tenderers except the lowest tenderer shall be refunded immediately after the expiry of the stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier. However, in case of two/ three bid system, earnest money deposit of bidders unsuccessful during technical bid evaluation etc. should be returned within 30 days of declaration of result of technical bid evaluation.

Copy of Enlistment Order and certificate of work experience and other documents as specified in the notice inviting e-tender shall be scanned and uploaded on the e-Tendering website within the period of bid submission. However, certified copy of all the scanned and uploaded documents as specified in e-tender notice shall have to be submitted by the lowest bidder within a week physically in the office of tender opening authority. Online bid documents submitted by intending bidders shall be opened only of those bidders, who has deposited EMD with any division of CPWD and other documents scanned and uploaded are found in order.

The bid submitted shall be opened at **15:30 Hrs on 02. 12. 2026**

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

(i) The bidder hides facts and furnishes false information, details and

certificates as per NIT condition.

(ii) The bidder does not deposit original EMD with division office of any Executive Engineer, CPWD.

(iii) The bidder does not upload all the documents as stipulated in the bid document.

(iv) If a bidder 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 bidder.

10 The contractor whose bid is accepted will be required to furnish performance guarantee at specified percentage of the tendered amount as mentioned in Schedule E and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds or Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule F, including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F', including the extended period if any, the Earnest Money deposited by the contractor will be forfeited automatically without any notice to the contractor. In case of forfeiture of EMD as aforesaid, the bidder will be debarred from re-tending process of the work. The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/ registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board including Provident Fund Code No. If applicable and also ensure the compliance of aforesaid provisions by the sub-contractors, if any engaged by the contractor for the said work within the period specified in Schedule F.

11 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 bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidders implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a

bearing on the execution of the work.

12 The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other tender and reserves to itself he authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.

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

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

15 The contractor shall not be permitted to bid for works in the CPWD Circle (Division in case of contractors of Horticulture/Nursery category) responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Gazetted officer in the Central Public Works Department or in the Ministry of 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.

16 No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.

17 The bid for the works shall remain open for acceptance for a period of Thirty (30) days from the date of opening of bids in case of single bid system.

18 The bid will become invalid:

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

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

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

19 This notice inviting Bid shall form a part of the contract document. The successful bidders/ 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: -

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

(ii) Standard C.P.W.D. Form 7/8 or other Standard C.P.W.D. Form as applicable.

20 For Composite Tenders

20.1.1 The Executive Engineer in charge of the major component will call bids for the composite work. The cost of bid document and Earnest Money will be fixed with respect to the combined estimated cost put to tender for the composite bid.

20.1.2 The bid document will include following three components:

Part A:- CPWD-6, CPWD-7 including schedule A to F for the major component of the work, Standard General Conditions of contract Construction Works 2023as amended/ modified up to last date of submission of tender.

Part B:- General terms and conditions, Particular specifications & Special Conditions, for major component and list of preferred makes applicable for major component (Civil) of the work.

Part C:- Schedule A to F for E&M component of the work, Particular Specifications, Special conditions, Technical Specifications for E&M Works and list of preferred makes applicable for minor component(works).

Part D- Schedule of Quantities of Civil and E&M Works.

Part E:- Layout Drawing, Architectural drawings (Plans, Elevations and Sections)

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

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

20.1.5 After acceptance of the bid by competent authority, the EE in charge of major component of the work shall issue letter of award on behalf of the President of India. After the work is awarded, the main contractor will have to enter into one agreement with EE in charge of major component and has also to sign two or more copies of agreement depending upon number of EE's/DDH in charge of minor components. One such signed set of agreement shall be handed over to EE/DDH in charge of minor component(s).

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

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

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

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

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

20.1.10 The main contractor has to enter into MoU with agencies contractor(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 contractor has to enter into MoU/agreement with the new contractor associated by him.

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

(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.

(B) Final bill of whole work shall be finalized and paid by the EE of major component.

Engineer(s) in charge of minor component(s) will prepare and pass the final bill for their component of work and pass on the same to the EE of major component for including in the final bill for composite contract.

Executive Engineer
CPWD, Calicut

FORM 'K'

DECLARATION ABOUT SITE INSPECTION

To,

The Executive Engineer,
CPWD, Calicut.

Name of Work: -**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work.**

Dear Sir,

It is hereby declared that as per CPWD–6 FOR e-BIDDING, I/ We the bidder(s) inspected and examined the subject site and its surrounding and satisfy myself / ourselves as to the nature of the ground and sub-soil (so far as is practicable), the forms and nature of the site. Ourselves before submitting the bid, the accommodation which may require and all necessary information as to risks, contingencies and other circumstances which may influence or affect our bid have been obtained. I/We the bidder shall have full knowledge of the site and no extra charge consequent upon any misunderstanding or otherwise shall be claimed in later date.

I /We bidder shall be responsible for arranging and maintaining at own cost all materials, tools & plants, water, electricity, access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by me/us implies that I / We have read this notice and all other contract documents and has / have made myself /ourselves aware of the scope and specifications of the work to be done and local conditions and other factors having a bearing on the execution of the work.

Yours faithfully

(Duly authorized signatory of the bidder)

Form 'F'

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

To,

The Executive Engineer,
CPWD, Calicut.

Name of Work: - **"Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work."**

Sir,

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

l/we, further, undertake that if such information comes to the notice of CPWD, then Engineer-in-Charge shall be free to terminate the bid/agreement and to forfeit the entire amount of earnest money deposit, performance guarantee and security deposits.

l/we, also undertake that in addition to above, the Engineer-in-Charge shall be free to debar us forever from tendering in CPWD.

The decision of Engineer-in-Charge or any higher authority shall be final and binding.

Signature of notary
with seal

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

Note: Affidavit to be furnished on a 'non-judicial' stamp paper of Rs. 200/- (scanned copy of the notarized affidavit to be uploaded at the time of submission of bid)

SECTION – I

BRIEF PARTICULARS OF THE PROJECT

Following provisions have been made in this estimate

CIVIL WORKS

1. External painting using Premium acrylic smooth Exterior paint in all the blocks including compound wall, OHT, Security room & pump operator room and internal painting using distemper in stair and common area of all the blocks.
2. Reconstruction of damaged compound wall at right side of the campus.
3. Replacing of the damaged CI waste water line by UPVC pipes.
4. Replacing of the G.I. water lines by CPVC pipes.
5. Replacement of the all the sanitary & water supply fittings including changing of the IWC to EWC in all the quarters including changing of toilet & bathroom floor & wall tiles.
6. Repair work of the drainage system including reconstruction of the drain.
7. Repair work of fly proof mesh in the doors of all the quarters.
8. Providing readymade RCC septic tanks and construction of some of the manholes.
9. Providing interlock tiles near Block I and rear side of the campus.
10. Water proofing of toilets & bathrooms.

ELECTRICAL WORKS

1. Supplying and laying of street light cable
2. SITC of 6 Nos. street light poles along with 6 Nos. LED street light fittings
3. SITC of lighting arrangements for the car parking area
4. Supplying and laying of power cable at the main LT panel, including providing necessary cable joints.
5. Providing 16 Nos. pipe earthing for the energy meter panels including necessary connections
6. Replacing of 7 Nos. energy meter panels.

FORM "C"

RECEIPT OF DEPOSITION OF ORIGINAL EMD

(Receipt No.....…….. dated .....…)

1. Name of Work: **Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work.**
2. NIT No: 42/SE/EECLT/2026-2027
3. Estimated Cost: Rs. 1,76,73,915/-
4. Amount of Earnest Money Deposit: Rs. 3,53,478/-
5. Last date of submission of bid: 02.12.2026

[To be filled by The EXECUTIVE ENGINEER receiving the EMD]

1. Name of Contractor:
2. Form Of EMD:
3. Amount of EMD:
4. Date of Submission of EMD:

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

CPWD-7/8

GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS
DEPARTMENT

Percentage Rate Tender-& Contract for Works

(A) Tender for the work of: - "**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work."**

(i) To be uploaded by **02. 12. 2026 up to 15:00 Hrs by the Executive Engineer, CPWD, Calicut.**

(ii) To be opened in presence of tenderers who may be present at **15: 30 Hrs on 02.12.2026** in the office of **Executive Engineer, CPWD, Calicut**

TENDER

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

I/ We hereby tender for the execution of the work specified for the President of India within the time specified in Schedule 'F', viz., schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respects in accordance with, such conditions so far as applicable.

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

A copy of earnest money in receipt of prescribed amount deposited in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee (as prescribed) issued by a Commercial Bank, is scanned and uploaded (strike out as the case may be). If I/We, fail 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 India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

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

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

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

Signature of Contractor
Postal Address

ACCEPTANCE

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

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

(a)

(b)

(c)

For & on behalf of President of India

Signature……

Designation: Executive Engineer,
CPWD, Calicut

Dated:

PROFORMA OF SCHEDULES FOR MAJOR COMPONENT
(CIVIL)

SCHEDULE 'A'

Schedule of Quantities	**:**	**Pages from 162 to 180**

SCHEDULE 'B'

Schedule of materials to be issued to the contractor.

SCHEDULE 'D'

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

a. Special Conditions	:	**Pages from 35 to 58**
b. Additional Conditions	:	**Pages from 59 to 69**
c. Particular specifications	:	**Pages from 70 to 105**
d. Guarantee Bonds	:	**Pages from. 108 to 109**

SCHEDULE 'E'

Reference to General Conditions of contract	**GCC 2023 for Maintenance Works as modified & corrected upto previous day of the last date of submission of the tender.**
Name of Work:	**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work**
Estimated cost of work:	**Rs. 1,76,73,915 /-** **(Civil – Rs. 1,60,50,467/- + E&M - Rs. 16,23,448/-)**
(i) Earnest money deposit:	**Rs. 3,53,478/- (to be returned after receiving Performance Guarantee)**
(ii)Performance Guarantee:	**(a) 5% of tendered value or Estimated cost put to tender (ECPT) (whichever is higher)** **(b) Where the tendered amount is less than eighty percent (80%) of the Estimated Cost Put to Tender (ECPT), the Performance Guarantee, in addition to the requirement under (a) above, shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and the tendered amount.**
(iii)Security Deposit:	**2.5% of tendered value**

SCHEDULE'F'

GENERAL RULES & DIRECTIONS:

Officer inviting tender	**Executive Engineer, CPWD, Calicut**
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**

Definitions:

2(vi)	Engineer-in-Charge:	**Executive Engineer, CPWD, Calicut or his success or thereof**
2(viii)	Accepting Authority:	**Superintending Engineer, CPWD, Calicut or his successor thereof**
2(x)	Percentage on cost of materials and Labour to cover all overheads and profits:	**15% (7.5% for Profits + 7.5% for overheads)**
2(x)(a)	Standard Schedule of Rates:	**Delhi Schedule of Rates 2023 as modified & corrected upto previous day of the last date of submission of the tender and Market Rates.**
2(xi)	Department:	**Central Public Works Department**
9(ii)	Standard CPWD Contract Form:	**GCC 2023 for Maintenance Works & CPWD - 7 as modified & corrected upto previous day of the last date of submission of the tender.**

Clause1

(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	**7days**
(ii)	Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above	**3 days**

Clause2

Authority for fixing compensation under clause 2:	**Superintending Engineer, CPWD, Calicut or his successor thereof**

Clause5

Number of days from the date of issue of letter of acceptance for reckoning	**10 days**

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

***MILESTONE FOR CIVIL* COMPONENT AS PER TABLE GIVEN BELOW**

Sl. No.	Description of Milestone (From date of Start)	Time Allowed	Amount to be withheld in case of non-achievement of milestone
1	Completion of all renovation works in Block V (15 Nos. Type-II quarters), including toilet and bathroom renovation as per the approved scope of work, external and internal painting of the block, complete internal and external water supply and sanitary pipelines, fittings and fixtures, installation of septic tank with all necessary connections, interconnection with the existing OHT and sump, and all associated plumbing and allied works, followed by testing, commissioning and handing over of the completed quarters to the client in all respects	02 months	1.5% of tendered amount
2	Completion of all renovation works in Block IV (6 Nos. Type-III quarters), including toilet and bathroom renovation as per the approved scope of work, external and internal painting of the block, other miscellaneous works in the qurters, complete internal and external water supply and sanitary pipelines, fittings and fixtures, installation of septic tank with all necessary connections, interconnection with the existing OHT and sump, and all associated plumbing and allied works, followed by testing, commissioning and handing over of the completed quarters to the client in all respects. Completion of compound wall	3.5 months	1% of tendered amount
3	Completion of all renovation works in Block III (10 Nos. Type-III quarters), including toilet and bathroom renovation as per the approved scope of work, external and internal painting of the block, other miscellneous works in the qurters, complete internal and external water supply and sanitary pipelines, fittings and fixtures, installation of septic tank with all necessary connections, interconnection with the existing OHT and sump, and all associated plumbing and allied works, followed by testing, commissioning and handing over of the completed quarters to the client in all respects. Completion of compound wall except painting. Completion of drain works in all aspects.	05 months	1% of tendered amount

4	Completion of all renovation works in Block I & II (4 Nos. Type-IV & 2 Nos Type V quarters), including toilet and bathroom renovation as per the approved scope of work, external and internal painting of the block, other miscellneous works in the quarters, complete internal and external water supply and sanitary pipelines, fittings and fixtures, installation of septic tank with all necessary connections, interconnection with the existing OHT and sump, and all associated plumbing and allied works, followed by testing, commissioning and handing over of the completed quarters to the client in all respects. Completion of compound wall except painting.	6.5 months	1% of tendered amount
5	Finishing all other repair and miscellaneous works	07 Months	0.5% of tendered amount

Time allowed for execution of work:	**07 (Seven) Months**

Authority to decide:

(i)	To convey the decision of Extension of time & Rescheduling of milestones	**Executive Engineer, CPWD, Calicut or his successor thereof**
(ii)	Rescheduling of milestones & shifting of date of start for delay in site handing over	**Superintending Engineer, CPWD, Calicut or his successor thereof**

PROFORMA OF SCHEDULES Clause 5 - Schedule of handing over of site:

Part	**Portion of site**	**Description**	**Time Period for handing over reckoned from date of issue of letter of intent.**
Part A	Portion without any hindrance	**Entire Site**	**7 Days**
Part B	Portions with encumbrances		
Part C	Portions dependent on work of other agencies		

Clause 5.2

Documentation of Hindrances	**1.** The contractor has to first register himself through a registration form, available on CPWD website under 'Contractors Login' tab. After registration, User ID and password will be automatically generated and sent on his registered mobile and email ID. Using this User ID and Password he can access the module and view all the works which are being carried out by him in CPWD and he can register the hindrance against any particular work. After recording the hindrance by the contractor, it will be visible to all concerned officers (JE and above) of that work. An alert through text message and email will be sent to EE. **2.** Executive Engineer will first assign the work to the JEs/AEs who will give their comments on the hindrance within 2 days. After that Executive Engineer of the work will have to take appropriate action on the hindrance within 2 days. The comments of JEs/AEs will not be visible to contractor, only the decision of the Executive Engineer on the hindrance will be visible to contractor under "Decision of the Engineer-in-charge."

Clause 5.4 Recovery per day for delay in submission of revised programme	**Rs. 200/- per each day**

Clause 6

Computerized Measure Book (CMB) / Electronic Measurement Book (EMB) Mode of measurement:	**EMB** **(If any technical problem in EMB then Engineer-in-charge can allow 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	**Rs. 23 Lakhs**

Clause 7A

Whether clause 7A shall be applicable	**Yes**

Clause 7B

Whether clause 7B shall be applicable	**Yes**

Clause 8

Compensation for non-submission of completion plans:	**Rs. 25,000/-**
Authority to decide compensation for non-submission of completion plans:	**Superintending Engineer, CPWD, Calicut or his successor thereof**

Clause10A

List of testing equipment to be provided by the contractor at site lab	**As per site Requirement**

Clause10B (ii)

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

Clause10C	**Applicable**
Component of Labour Expresses as percent of Total value of work	**25 %**

Clause10CC	**Not Applicable**

Clause11

Specifications to be followed for the execution of work:	**CPWD Specifications 2019 Vol. - I & II as modified & corrected upto last date of submission of tender.**

Clause 12	The completion cost shall, in no case, exceed 1.5 times the contract amount. Contractor will devise a system to keep a watch on quantum of work vis-a-vis balance item to complete design scope of work and will give the alerts to Engineer-in-charge before taking up extra item(s), deviation(s)so that completion cost does not exceed above limit. Work executed beyond above limit will neither be recorded nor be paid. Engineer-in charge will verify and confirm the alerts before assigning deviations (s) and / or extra item(s) to the contractor. If additional work (s) is required to complete defined scope of work beyond above limit the Engineer-in-charge may take up such work (s) separately. The contractor will not have any claim (s) whatsoever on this account.
Clause 12.2 Deviation, Extra Item & pricing	
Clause 12.2	**As per GCC 2023 for Maintenance Works & CPWD -** 7 as modified & corrected upto **previous day of the last date of submission of the tender.**
Clause 12.3	All the deviated quantities shall be paid at agreement rates
Clause 12.5	Cost index: Latest available cost index at the time of beginning of execution of extra item(s) shall be used in sub clause 12.2 for calculation rate (s) extra item(s).
Clause 12.6	Labour Rates: Labour Rates will be based on latest available circular issued by central govt. or state govt. whichever are higher applicable for the work.

Note: The rates so determined under clause 12 by the Engineer in Charge shall be final and binding on the contractor and shall not be arbitrable.

Clause16

Competent authority for deciding the reduced rates	**Superintending Engineer, CPWD, Calicut or his successor thereof**

Clause18

List of mandatory machinery, tools & plants to be deployed by the contractor at site:-	**As required for timely execution of work as per direction of Engineer in Charge**

Clause19

Clause 19 C	Rs. 500/- for each default	**Authority to decide penalty for each default -Engineer in charge**
Clause 19 D	Rs. 500/- for each default	
Clause 19 G	Rs. 500/- for each default	
Clause 19 K	Rs. 1000/- per tradesman per day	

Clause 25

Conciliator for settlement of Disputes	**Additional Director General, Region Kochi, CPWD, or his successor thereof**
Arbitrator Appointing Authority:	**Superintending Engineer, CPWD, Calicut or his success or thereof**
Place of Arbitration	**Calicut or as decided by the Arbitrator in consultation with both the parties**

Clause32: *Requirement of Technical Representative(s) and recovery rate*

Sl. No.	**Requirement of Technical Staff**		**Minimum experience (Years)**	**Designation of technical staff**	**Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 32**
	Qualification	**Number(Of Major/ Minor Component)**			
1	Graduate Engineer Or Diploma Engineer	**1 + 1**	2 or 5 respectively	Project Manager Cum Planning / quality /site/ billing Engineer	Rs.15,000/- per month per person.

Assistant Engineers retired from government service who 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.

Clause38

(i)(a)	Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates ..... printed by C.P.W.D.	On the basis of Delhi Schedule of Rates 2023 printed by C.P.W.D.

(ii) Variations permissible on theoretical Quantities:

(a)	Cement	
	For works with estimated cost put to tender more than Rs.25 lakh.	2% plus/minus.
(b)	Bitumen All Works	2.5% plus & only nil on minus side.
(c)	Steel Reinforcement and structural steel sections for each diameter, section and category	2%plus/minus
(d)	All other materials.	Nil

Executive Engineer
Calicut, CPWD

TIME SCHEDULE FOR HANDING OVER OF QUARTERS AND EXECUTION OF RENOVATION WORKS

Sl. No.	Block	Schedule for handing over to the contractor	Time allowed for completion of renovation	Remarks
1	Block V – 15 Qtrs - Type II	10 days after the award of work	45 days from the date of handing over.	The compound wall construction and all other development works included in the scope of the agreement shall be carried out simultaneously and in parallel with the renovation works in the respective blocks. The contractor shall make adequate arrangements for deployment of separate manpower, materials, machinery and resources to ensure that these works progress concurrently without affecting the progress of the block-wise renovation works. All such development works shall be completed within the overall stipulated completion period of the agreement.
2	Block IV (Balance Portion) – 6 Qtrs- Type III	within 5 days after completion of renovation works in Block V.	45 days from the date of handing over.	
3	Block III- 10 Qtrs - Type III	within 5 days after completion of renovation works in Block IV.	45 days from the date of handing over.	
4	Blocks I & II – 6 Qtrs (4 type IV, 2 type V)	within 5 days after completion of renovation works in Block III	45 days from the date of handing over.	

CONDITIONS: -

1. The contractor shall ensure adequate deployment of manpower, materials, tools and equipment to execute the works simultaneously wherever feasible and achieve completion within the stipulated period.

2. The contractor shall coordinate with the Engineer-in-Charge and the client for smooth execution and handing over of the quarters in accordance with the above schedule.

FORM OF BANK GUARANTEE FOR EARNEST MONEY DEPOSIT/ PERFORMANCE GUARANTEE/ SECURITY DEPOSIT/ MOBILISATION ADVANCE

(On non-judicial stamp paper of minimum Rs. 100)

1. Whereas the Executive Engineer-Calicut, CPWD, Calicut on behalf of the President of India (hereinafter called "The Government") has invited bids under NIT No.**42/SE/EECLT/2026-2027** for "**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work.** " The Government has further agreed to accept irrevocable Bank Guarantee for Rs ..... (Rupees ..... Only) valid upto ..... (date)* ..... as Earnest Money Deposit from ..... (name and address of contractor) ..... (hereinafter called "the Contractor") drawn in favour of The Executive Engineer - Calicut, CPWD for compliance of his obligations in accordance with the terms and conditions of the said NIT.

OR **

2. Whereas the Executive Engineer, CPWD, Calicut on behalf of the President of India (hereinafter called "The Government") has entered into an agreement bearing number ..... with ..... (name and address of contractor) ..... (hereinafter called "the Contractor") for execution of the work "**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work.** ". The Government has further agreed to accept irrevocable Bank Guarantee for Rs ..... (Rupees ..... Only) valid upto ..... (date)* ..... as Performance Guarantee/ Security Deposit/ Mobilisation Advance from the said contractor drawn in favour of The Executive Engineer - Calicut, CPWD for compliance of his obligations in accordance with the terms and conditions of the agreement.
3. We ..... (indicate the name of the bank) ....., (hereinafter referred to as "the Bank") hereby undertake to pay to the Government an amount not exceeding Rs ..... (Rupees ..... only) on demand by the Government within 10 days of demand.
4. We, ... (Indicate the name of the Bank) ....., do hereby undertake to pay the amount due and payable under this Guarantee without any demure, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs ..... (Rupees ..... only).
5. We, ... (Indicate the name of the Bank) ....., further undertake to pay the Government any money so demanded no withstanding any dispute or disputes raised by the Contractor in any suit or proceeding pending before any Court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of

our liability for payment there under and the Contractor shall have no claim against us for making such payment.

6. We, ... (Indicate the name of the Bank) ....., further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extent time of performance by the said Contractor from time to time or to postpone for any time or from time to time any 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 liablility by reason of any such variation or extension being granted to the said Contractor or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

7. We, ... (Indicate the name of the Bank) ..... further agree that the Government at its option shall be entitled to enforce this Guarantee against the Bank as a principle debtor at the first instance without proceeding against the contractor and not withstanding any security or other guarantee the Government may have in relation to the Contractors liabilities.

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

9. We,..... (Indicate the name of the Bank) ..... undertake not to revoke this Guarantee except with the previous consent of the Government in writing.

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

Date.....

Witnesses:

1. Signature.....
   Name and address

2. Signature.....
   Name and address

Authorised signatory
Name
Designation
Staff code no.
Bank seal

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

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

PART – B

FOR CIVIL WORKS
(MAJOR COMPONENTS)

Name of Work: Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work

SPECIAL CONDITIONS FOR CIVIL WORKS

1.0 General

1.1 Specifications & Order of preference:

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

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

1.1.3 If there is 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 Specifications, Special Conditions and Additional conditions, if any.

(iii) Drawings.

(iv) CPWD Specifications.

(v) General conditions of contract for CPWD works.

(vi) Indian Standard Specifications of B.I.S.

(vii) Manufacturers' specifications & as decided by Engineer-in-charge.

(viii) Sound Engineering practices.

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

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

1.2 Scope:

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

1.2.2 The works to be under taken by the contractor shall inter alia include the following at Contractors own cost:

i. Preparation of detailed SHOP drawings and AS BUILT drawings wherever applicable.
ii. Obtaining of Statutory permissions wherever applicable and required.
iii. Pre-commissioning tests as per relevant standard specifications, code of practice, Acts and Rules wherever required.
iv. Warranty obligation for the equipment and/or fittings/fixtures supplied by the contractor.

1.2.3 Contractor shall provide all the shop drawings or layout drawings at his own cost for all the coordinated services before starting any work or placing any order for any of the services etc. These shop drawings/layout drawings shall be got approved from Engineer-in-charge before implementation and this shall be binding on the contractor. The contractor shall submit material submittals along with material sample for approval of Engineer-in-charge prior to delivery of material at site.

1.2.4 All the hidden items such as water supply lines, drainage pipes, conduits, sewers etc. are to be properly tested as per the design conditions before covering and their measurements in computerized measurement book duly test checked shall be deposited with Engineer in charge or his authorized representative, prior to hiding these items.

1.3 Deployment of Technical staff & skilled labour:

The quality of work is of paramount importance. Contractor shall have to engage well experienced skilled labour and deploy modern T&P and other equipments to execute the work to provide the desired quality.

The Contractor shall depute Site Engineer & 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 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. The Project Manager of the contractor having minimum twenty (20) years of experience in similar nature of work along with all technical staff as mentioned in the clause 32 of the GCC, shall always be available at the site during execution of work.

1.4 Removal of Machinery, Tools & Equipment:

Removal of machinery, tools & equipment shall be allowed to be moved away from the site only when, in written opinion of Engineer-in-Charge, the same are no longer required at site of work.

1.5 Soil conditions of site:

Contractor(s) shall study the soil investigation report for the site, which can be collected from Executive Engineer, Calicut after the acceptance of the tender. Contractor should satisfy himself about complete characteristics of soil and other parameters at site. No claim whatsoever on account of any discrepancy between the sub-surface strata conditions that may be actually encountered at the time of execution of the work and those given in soil report, in-accuracy or interpretation thereof shall be entertained from the Contractor under any circumstances.

1.6 Site condition:

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

1.7 Precautionary measures:

1.7.1 Temporary barricading shall be provided at Site by the contractor at their own cost. The barricading physically define the boundaries of the plot for restricted entry to only those involved in the work and also to prevent any accident and also not causing any inconvenience to the traffic. The barricading panels shall be painted and "CPWD" mark should be made in suitable size, shapes and number as directed by Engineer-in-charge without any extra cost. It shall be dismantled and taken away by the contractor after completion of the work at his own cost with the permission of Engineer-in-charge.

1.7.2 Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost. The contractor shall take all precautions to prevent his workmen and employees from removing and damaging any Flora (plant/vegetation) from the campus/site.

1.7.3 The contractor shall take all precautions to avoid accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused to work due to negligence on his part. No hindrances shall be caused to traffic, during the execution of the work. In case of any accident of the labourers/ contractual staff, the entire responsibility will rest on the contractor and any compensation under such circumstances, if becomes payable, shall be entirely borne by the contractor.

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

1.7.5 The Contractor shall take all necessary precautions to prevent any nuisance or inconvenience to the owners, tenants or occupants of the adjacent properties and to

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

1.8 General cleanliness of the site and Stacking & Storage of Materials:

1.8.1 The site of work shall be always kept clean in general strictly adhering to approved job layout and green building parameters. The Contractor shall take all care to prevent any water- logging at site. The waste water shall not be allowed to be collected at site. It may be directly pumped into the public drainage system with prior approval of the concerned authorities. For discharge into public drainage system, necessary permission shall be obtained from concerned authorities after paying the necessary charges, if any, directly to the authorities. The work shall be carried out in such a way that the area is kept clean and tidy. All the fees/charges in this regard shall be borne by the Contractor. Nothing extra shall be payable on this account.

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

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

1.8.4 The contractor shall construct suitable godowns, yard at the site of work for storing all other materials so as to be safe against damage by sun, rain, damages, fire, theft etc. at his own cost and also employ necessary watch and ward establishment for the purpose at his cost.

1.9 Lab Equipment:

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

1.10 Setting Out

1.10.1 The contractor shall establish, maintain and assume responsibility for grades, lines, levels and bench marks. He shall report any errors or inconsistencies regarding grades, lines, levels, dimensions to the Engineer-in-Charge before commencing work. Commencement of work shall be regarded as the contractor's acceptance of such grades, lines, levels and dimensions and no claim shall be entertained at a later date for any errors found.

1.10.2 In order to set the alignment of buildings / foundations and to mark the same on the ground, the agency is to adopt "total station" surveying method. The agency is to engage a well versed and well experienced surveyor in "total station" survey. Nothing extra for this total station survey is payable.

If at any time, any error in the respect of setting out appears during the progress of the work, the contractor shall, at his own expense rectify such error if so required, to the satisfaction of the Engineer-in-Charge.

(i) The contractor shall ascertain himself and confirm the site levels with respect to GTS bench mark from the concerned authorities. The contractor shall protect and maintain temporary/ permanent benchmarks at the site of work throughout the execution of the work. These bench marks shall be got checked by the Engineer-in-Charge or his authorized representatives. The work at different stages shall be checked with reference to bench marks maintained for the said purpose. Nothing extra shall be payable on this account.

(ii) The approval by the Engineer-in-Charge, of the setting out by the contractor, shall not relieve the contractor of any of his responsibilities and obligation to rectify the errors/defects, if any, which may be found at any stage during the progress of the work or after the completion of the work.

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

1.10.4 The Contractor shall carry out survey of the work area, at his own cost, setting out the layout of building in consultation with the Engineer-in-Charge &

proceed further. Any discrepancy between the architectural drawings and actual layout at site shall be brought to the notice of the Engineer-in-charge. It shall be responsibility of the Contractor to ensure correct setting out of alignment. Total station survey instruments only shall be used for layout, fixing boundaries, and center lines, etc., along with the theodolites. Nothing extra shall be payable on this account.

1.10.5 Contractor shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of work. All such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings.

1.11 Temporary Water, Electricity & Telephone Connections:

1.11.1 The contractor shall make his own arrangements for water including boring of tube wells etc. if necessary and for electricity by obtaining electric connections and by providing diesel generators of adequate capacity if required and make necessary payments directly to the State Govt. departments concerned. Necessary approval shall be taken by the contractor from the ground water department for boring of tube wells. Nothing extra shall be paid on these accounts. Contractor shall get the water tested from laboratory approved by the Engineer-in-charge at regular interval as per the CPWD Specifications 2019. All expenses towards collection of samples, packing, transportation and testing charges etc. shall be borne by the contractor. The contractor shall obtain environmental and pollution clearance for the diesel generators. Nothing extra shall be paid on this account.

1.11.2 The Contractor shall arrange electricity at his own cost for testing of the various electrical installations as directed by Engineer-in-Charge and for the consumption by the contractor for executing the work. Also all the water required for testing various electrical installations, fire pumps, wet riser / firefighting equipment, fire sprinklers etc. and also testing water supply, sanitary and drainage lines, water proofing of underground sump, overhead tanks, water proofing treatment etc. shall be arranged by the contractor at his own cost. Nothing extra shall be payable on this account.

1.11.3 Arrangement of temporary telephone connection, water and electricity required by Contractor, shall be made by him at his own cost and also necessary permissions shall be obtained by him directly from concerned authorities, under intimation to the Department. Also, all initial cost and running charges, and security deposit, if any, in this regard shall be borne by him. The Contractor shall abide by all the rules/ bye laws applicable in this regard and he shall be solely responsible for any penalty on account of violation of any of the rules / byelaws in this regard. Nothing extra shall be payable on this account.

1.11.4 The Contractor shall be responsible for maintenance and watch and ward of the complete installation and water / electricity meter and shall also be responsible for any pilferage, theft, damage, penalty etc. in this regard. The Contractor shall indemnify the Department against any claim arising out of pilferage, theft, damage, penalty etc. whatsoever on this account. Security deposit for the work shall be released only after No Dues Certificates are obtained from the local Authorities from

whom temporary electric/ water / telephone connection have been obtained by the Contractor. Nothing extra shall be payable on this account.

1.11.5 The Department shall in no way be responsible for either any delay in getting electric and/or water and/or telephone connections for carrying out the work or not getting connections at all. No claim of delay or any other kind, whatsoever, on this account shall be entertained from the Contractor. Also contingency arrangement of stand-by water & electrical supply shall be made by the Contractor commencement and smooth progress of the work so that work does not suffer on account of power failure or disconnection or not getting connection at all. No claim of any kind whatsoever shall be entertained on this account from the Contractor. Nothing extra shall be payable on this account.

1.12 Drawings:

1.12.1 It is the duty of the contractor to submit the structural design as per the prevailing relevant IS codes and structural drawings duly proof checked from the Government Engineering Colleges/IITs/NITs, if required; no hindrance shall be allowed on this account. Nothing extra shall be payable on account of structural design and structural drawings. However, the structural drawing proof checking charges are reimbursable.

1.12.2 The work shall be carried out in accordance with site conditions, as per direction of Engineer-in –Charge. Before commencement of any item of work, the contractor shall correlate drawings prepared for the work, nomenclature of items, specifications etc. and satisfy himself that the information available there from is complete and unambiguous. The figures & the written dimensions of the drawing shall supersede the measurement by scale. The discrepancy, if any, shall be brought to the notice of the Engineer-in-Charge for immediate decision before execution of the work. The contractor alone shall be responsible for any loss or damage occurring by the commencement of work on the basis of any erroneous and/ or incomplete information and no claim, whatsoever shall be entertained on this account. The delay caused on account of non-timely action by the contractor in resolution of the differences whatsoever shall not be considered as valid ground for extension of time unless otherwise accepted by Engineer-In-Charge.

1.13 Scaffolding & Staging:

1.13.1 **Wherever required for the execution of work, all the scaffolding shall be provided and suitably fixed, by the contractor**. The scaffolding shall be provided strictly with steel double scaffolding system, suitably braced for stability, with all the accessories, gangways, etc. with adjustable suitable working platforms to access the areas with ease for working and inspection. Single scaffolding system is strictly prohibited and shall invite necessary action. It shall be designed to take all incidental loads. It should cater to the safety features for workmen. **Nothing extra shall be**

payable on this account. It shall be ensured that no damage is caused to any structure due to the scaffolding.

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

1.14 Co-ordination with other agencies:

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

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

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

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

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

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

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

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

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

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

(viii) Resolve the disputes with other Contractor amicably and the Engineer-in-Charge shall not be made intermediary or arbitrator. The department shall not be responsible for the disputes between the subject work contractor and associate contractor / other agencies working at site. No claim shall be allowed by the department.

1.15 Procurement of materials:

1.15.1 All material shall only be brought at site as per program finalized with the Engineer-

in-Charge. Any pre-delivery of the material not required for immediate consumption shall not be accepted and thus not paid for.

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

1.16 Protection of Existing Services & buildings and Materials:

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

1.16.2 In case the existing services are to be shifted permanently, then before dismantling the existing services, alternate/diversion of service lines has to be laid by the contractor so that there is no interruption in use of existing services. The contractor has to plan the alternate suitable route for diversion/shifting of service lines and get the same approved from the Engineer-in-Charge before starting shifting of services. Nothing extra shall be paid except the payment of dismantling and laying of new service lines as per conditions of contract.

1.16.3 All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest discovered on project location during excavation/construction shall be the property of the Government, and shall be dealt with as per provisions of the relevant legislation. The contractor will take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing. He will, immediately upon discovery thereof and before removal acquaint the Engineer-in-charge of such discovery and carry out the official instructions of Engineer-in-charge for dealing with the same, till then all work shall be carried out in a way so as not to disturb/ damage such article or thing.

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

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

1.17 Rates and other conditions for payment:

The rates quoted by the Contractor are deemed to be inclusive of the following-

1.17.1 Site clearance, setting out work, profile, establishment of reference bench mark(s), taking spot levels, construction of all safety and protection devices, barriers,

barricading, signage, labour safety, welfare & training measures, preparatory works, working during monsoon, working at all depths, height, lead, lift and location etc. until / unless specified otherwise. Nothing extra shall be payable on this account. Payment for centering & shuttering , however, if required to be done for floor heights greater than 3.50m shall be admissible at rates arrived in accordance with clause 12 of the agreement if not already specified.

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

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

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

1.17.5 Providing sunk flooring in bath-rooms, kitchen, etc.

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

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

1.17.8 The rates quoted by the tenderer, shall be inclusive of all taxes including GST and levies applicable in respect of this contract shall be payable by the contractor and Government will not entertain any claim whatsoever in respect of the same.

1.17.9 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.

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

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

1.17.11 **Royalty**/Seigniorate fee at the prevalent rates if any shall have to be paid by the contractor and no claims shall be entertained on account of this on all the boulders, stone aggregate, brick aggregate, shingle, coarse or fine sand, earth, gravel, bajri or any other material etc. collected by him for the execution of the work, directly to the Revenue Authority or authorized agent of the State Government concerned or Central Government. Nothing extra shall be payable on this account.

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

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

1.17.14 The Contractor shall make all necessary arrangements for protecting from rain or likewise extreme weather conditions, the work already executed and for carrying out

the further work, during monsoon including providing and fixing temporary shelters, protections etc. Nothing extra shall be payable on this account. Also, no claims for hindrance shall be entertained on this account.

1.17.15 In case of flooding of site on account of rain or any other cause and any consequent damage, whatsoever, no claim financially or otherwise shall be entertained not withstanding any other provisions elsewhere in the contract agreement. Also, the Contractor shall make good, at his own cost, the damages caused, if any. Further, no claims for hindrance shall be entertained on this account.

1.17.16 No payment shall be made for any damage caused by fire, 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 the work for which payment has been advanced to him under the contract and he shall make good the same at his risk and cost. The contractor shall be fully responsible for safety and security of his material, T&P/Machinery brought to the site by him. The contractor shall maintain all the work in good condition at his own cost till the completion of the entire work.

1.17.17 In case the same item appears more than once in the schedule of work under the same sub head or among the different sub heads of works, the lowest rate quoted for that item shall be taken for other items also and tender will be evaluated accordingly.

1.17.18 The ESI and EPF contribution on the part of employer in respect of this contract shall be paid by the contractor. These contributions on the part of employer paid by the contractor shall be reimbursed by the Engineer in charge to the contractor on actual basis. The applicable and eligible amount of EPF& ESI shall be reimbursed preferably within 7 days but not later than 30 days of submission of documentary proof of payment which are in order.

1.18 Foreign Exchange:

1.18.1 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 if required to be carried out during execution of the work. No delay and no claim of any kind shall be entertained from the Contractor, on account of variation in the foreign exchange rate.

1.18.2 The contractors have to quote the corresponding imported items in “Indian Rupees” in the Schedule of Quantities which shall include all incidental charges including freight, taxes including GST, import duties, fluctuations in currency rates. No extra payment will be made over and above the quoted rates.

1.19 Tools & Plant:

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.

1.20 As Built & Service Drawings:

The contractor shall submit completion plans for water supply, internal sanitary installations and building drainage work within 15 days of the date of completion. These drawings shall be submitted in the form of two sets of CD's and four portfolios (300 x 450 mm) each containing complete set of drawings on approved scale indicating the work as installed. These drawings shall clearly indicate complete plant room layouts, piping layouts and sequencing of automatic controls, location of all concealed piping, valves, controls and other services. In case the contractor fails to submit the completion plans as aforesaid, security deposit shall not be released and these shall be got prepared at his risk and cost.

The contractor shall submit as built plans and also completion plan of services for Internal and External Civil, Electrical and Mechanical Services within thirty days of the completion of the work, provided that the service plans having been issued for execution by the Engineer-in-Charge, unless the contractor, by virtue of any other provision in the contract, is required to prepare such plans.

1.21 Computerized MBs & SMBs:

1.21.1 The contractor shall make available four (04) sets of computerized Standard Measurement Books (SMBs) having measurement of all the permanent standing in a building.

1.21.2. The contractor will submit computerized bill with measurement sheet for the work carried out by him for making payment as per Clause – '6' of the CPWD General Conditions of Contract 2023 for Construction Works (with correction slips up to the last date of submission of tender). For casting of RCC members and other hidden items the corrected and duly test checked measurement sheets of reinforcement or that of other hidden items shall be deposited with Engineer in charge or his authorized representative, before casting of RCC or other hidden items. The delay in submission of corrected and duly checked measurement sheet may, therefore, delay casting of RCC or execution of hidden item for which no hindrance shall be recorded.

1.21.3. Electronic measurement book is introduced. The contractor shall comply with the same as per the direction of Engineer-in-charge.

1.22 Water Supply & Sanitary Installations & Testing:

1.22.1 Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should conform to approved manufacturers specifications where CPWD Specifications are not applicable. The contractor should get the materials (fixtures/fittings) tested from approved labs wherever required at his own cost. The contractor shall submit for the approval of the Engineer-in-Charge, the name of the plumbing agency (along with their working experience in recent past) proposed to be engaged by him.

1.22.2 The contractor shall give performance test of the entire installation(s) as per the standing specifications before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for the test.

2.0 SECRECY

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

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

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

3.0 LABOUR AND SECURITY

3.1 In the event of the contractor(s) committing a default or breach of any of the provisions of the Central Public Works Department, Contractor's Labour Regulations and Model Rules for the protection of health and sanitary arrangements for the workers as amended from time to time or furnishing any information or submitting or filing any statement under the provisions of the above Regulations and' Rules which is materially incorrect, he/they shall, without prejudice to any other liability, pay to the Government a sum not exceedingRs.500/- for every default, breach or furnishing, making, submitting, filing such materially incorrect statements and in the event of the contractor(s) defaulting continuously in this respect, the penalty may be enhanced to Rs.1000/- per day for each day of default subject to a maximum of 5 per cent of the estimated cost of the work put to tender. The decision of the Engineer-in-Charge shall be final and binding on the parties.

No payment shall be made for construction of labour housing.

3.2 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.

3.3 If as per the rules of the local authority, the huts for labour are not to be erected at the site of work by the contractors, the contractors are required to provide such accommodation as is acceptable to local bodies and nothing extra shall be paid on this account.

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

account of delay in entry of vehicles and labour including restrictions in working hours, if there is any.

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

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

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

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

3.9 Normally contractor's material / vehicles etc. shall be allowed to move in / go-out between 7 AM to 7 PM only & no movement of material / vehicles out of the site of work shall be allowed during night hours unless specific permission is obtained from the "Administrator".

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

3.11 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 such accounts. The loss of time on these accounts, if any, shall have to be made up by augmenting additional resources whatever required. Nothing extra shall be payable on this account.

4.0 OFFICE INFRASTRUCTURE:

4.1 The Contractor shall construct / provide one site office at his own cost on the construction site consisting of One (1) room including one (1) attached toilet with total built up area not less than 30 Sqm for CPWD staff. The location and plan shall be got approved from Engineer-in-Charge.

4.2 The contractor shall make arrangement for Helmets and leather shoes (meant of construction work at sites) for all field staff of the department during the entire

period of construction for safety reasons. One helmet and two pairs of shoes per staff member (maximum twelve members) of the departments per year shall be arranged by the contractor at his own cost.

5.0 DOCUMENTATION

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

6.0 PROGRESS CHART: -

6.1 The contractor shall submit a Time and Progress Chart for each mile stone. The Engineer-in-charge may within 10 days thereafter, if required modify, and communicate the program approved to the contractor failing which the program submitted by the contractor shall be deemed to be approved by the Engineer-in-charge. The work programme shall include all details of balance drawings and decisions required to complete the contract with specific dates by which these details are required by contractor without causing any delay in execution of the work. The chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer-in-charge and the Contractor within the limitations of time imposed in the Contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate programme has been agreed upon) complete the work as per mile stones given in Schedule 'F'.

6.2 In case of non-submission of construction programme by the contractor the Program approved by the Engineer-in-charge shall be deemed to be final.

6.3 The approval by the Engineer-in-charge of such programme shall not relieve the contractor of any of the **obligations** under the contract.

6.4 The contractor shall submit the Time and Progress Chart and progress report using the mutually agreed software or in other format decided by Engineer-in-charge for the work done during previous month to the Engineer-in-charge on or before 5^{th} day of each month failing which a recovery Rs. 5000/- shall be made on per week or part basis in case of delay in submission of the monthly progress report.

6.5 The program chart should include the following: -

a) Descriptive note explaining sequence of various activities.

b) BAR CHARTS prepared in mutually agreed software or in other format decided by Engineer-in-charge which will indicate resources in financial terms, manpower and specialized equipment for every important stage.

c) Program for procurement of materials by the contractor.

d) Program for arranging and deployment of manpower both skilled and unskilled so as to achieve targeted progress.

e) Program of procurement of machinery / equipment having adequate capacity, commensurate with the quantum of work to be done within the stipulated period, by the contractor. In addition, to the above to achieve the progress of work as per programme, the contractor must bring at site adequate shuttering material required for cement concrete and RCC works etc. The contractor shall submit shuttering schedule adequate to complete the structure work within the laid down physical milestones.

f) Programme for achieving milestones.

6.6 The submission for approval by the Engineer-in-charge of such programme or such particulars shall not relieve the contractor of any of the duties or responsibilities under the contract. This is without prejudice to the right of Engineer-in-charge to take action against the contractor as per terms and conditions of the agreement.

7.0 PROGRESS AND MONITORING OF WORK:

7.1 The progress report shall contain the following, apart from whatever else may be required as specified: -

(i) Construction schedule of the various components of the work through a bar chart for the next three months (or as may be specified), showing the micro milestones, targeted tasks and up to date progress. At least 10 digital photographs showing all the parts of construction site along with at least 5 minutes video of executions of different items in soft copy has to be submitted in every monthly progress report.

(ii) Progress chart of the various components of the work that are planned and achieved, for the month as well as cumulative up to the month, with reason for deviations, if any in a tabular format.

(iii) Plant and machinery statement, indicating those deployed in the work.

(iv) Man-power statement, indicating individually the names of all the staff deployed on the work, along with their designations. Number of skilled workers and unskilled workers deployed on the work and their location of deployment.

(v) Financial statement, indicating the broad details of all the running account payment received up to date, such as gross value of work done, advances taken, recoveries effected, amount withheld, net payments details of Cheque payment received, extra /substituted /deviations items if any, etc.

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

indirectly on the work according to the provisions of the labour and other statutory bodies regulations and the agreement entered upon by the Contractor with them.

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

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

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

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

8.0 PROJECT REVIEW MEETINGS:

The contractor, immediately on award of work shall submit details of his key personnel to be engaged for the work at site. In addition, he shall furnish the Engineer-in-charge detailed organization involved with the work. The contractor shall present the programme and status at various review meetings as required.

Monthly Review Meetings: Shall be attended by Project - in - charge and the Management Representative who can take independent decisions along with CPWD, client’s representatives.

Agenda

a)Progress Status/Statistics.
b)Completion Outlook.
c)Major holdups/slippages.
d)Assistance required.
e)Critical issues.
f) Any decision on queries raised either by Contractor/PMC.
g)Anticipated cash flow requirement for next two months.

9.0 DEFECT LIABILITY PERIOD (REFUND OF SECURITY DEPOSIT):

The defect liability / maintenance period shall be 12 months after the date of completion of work for this contract agreement. The Security Deposit shall be released after the defect liability period of 12 months after completion of work and for this, the contractor shall have to produce a certificate stating that no defects are pending for rectification from the Engineer-in-charge, but subject to other provisions specified elsewhere in the contract agreement.

10.0 SAFETY MEASURES

10.1 The issue of construction safety & standards has gained utmost importance in recent times. This subject is to be dealt with in an integrated manner with an approach to developing and establishing a safety culture at work sites. Broadly, its components are:

(i) Creating awareness.
(ii) Education.
(iii) Training.
(iv) Implementation.
(v) Enforcement measures.

All workers of contractor and associate agencies, invariably and at all the times, must follow all safety norms, adopt safe construction practices and use all required safety gadgets in their working throughout the project duration.

10.2 The contractor shall issue *Photo Identity Cards* with unique numbers containing salient information of workers for the labor& his staff.

10.3 The Contractor shall monitor and achieve the objectives of construction safety continuously, progressively and through affirmative action, and shall oversee implementation of safety program over the entire construction period.

10.4 Warning / Caution Boards

All temporary warning / caution boards / glow signage display such as “Construction Work in Progress”, “Keep Away”, “No Parking”, Diversions & protective Barricades etc. shall be provided and displayed during day time by the Contractor, wherever required and as directed by the Engineer-in-Charge. These glow signage and red lights shall be suitably illuminated during night also. The Contractor shall be solely responsible for damage and accident caused, if any, due to

negligence on his part. Also he shall ensure that no hindrance, as far as possible, is caused to general traffic during execution of the work. This signage shall be dismantled & taken away by the Contractor after the completion of work, only after approval of the Engineer – in – Charge. Nothing extra shall be payable on this account.

10.5 Sign Boards

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

10.5.2 A display board shall be kept at site which would list the names of workers, teams and agencies following safety program in the best manner. This would be updated weekly.

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

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

11.0 SPECIAL CONDITION FOR HARDWARE AND SANITARY WARES:

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

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

i) 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 the AE/AEE giving approximate quantity of such materials.

ii) 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, 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.

12.0. INSPECTION OF WORKS:

12.1 In addition to the provisions of relevant clauses of the contract, the work shall also be open to inspection by the Superintending Engineer, CPWD, Calicut and other senior officers of CPWD in addition of the Engineer-in-charge, his authorized representatives, Authorities and Team of Third-Party Quality Assurance engaged for the work. The contractor shall at times during the usual working hours and at all times at which reasonable notices of the intention of the Engineer-in-charge or other officers as stated above to visit the works shall have been given to the contractor, either himself be present to receive the orders and instructions or have a responsible representative duly accredited in writing, to be present for that purpose.

12.2 The committee/consultant appointed by CPWD, shall be inspecting the works including workshops and fabrication factory to ensure that the works in general being executed according to the design, drawings and specifications laid down in the contract. Their observations shall be communicated by CPWD engineering staff and compliance is to be reported to CPWD. The committee/consultant appointed by CPWD shall certify on completion of particular building that it has been constructed according to the approved drawings design and specifications.

12.3 Senior Officers of CPWD, Dignitaries from Central Ministry / Department, State Government and Client Department Authorities shall be inspecting the on-going work at site at any time with or without prior intimation. The contractor shall, therefore, keep updated the following requirements and detailing: -

(i) Display Board showing detail of work, weekly progress achieved with respect to targets, reason of shortfall, status of manpower, wages being paid for different categories of workers.

(ii) Entrance and area surrounding to be kept cleaned.

(iii) Display layout plan key plan, building drawings including plans, elevations and sections.

(iv) Upto date displays of programme chart (Bar charts).

(v) Keep details of quantities executed, balance quantities, deviations, possible Extra item, substituted Item etc.

(vi) Keep plastic / cloth mounted one sets of building drawings.

(vii) Set of Helmets and safety shoes for safety.

13.0 INSURANCE POLICIES:

Before commencing the execution of 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, at site

of work. The Contractor shall obtain and submit to the Engineer-in-Charge proper Contractor All Risk Insurance Policy for an amount equivalent to the contract amount for this work, with Engineer-in-Charge as the first beneficiary. The insurance shall be obtained in joint names of Engineer-in-Charge and the Contractor (who shall be second beneficiary). Also, he shall indemnify the Department from any liability during the execution of the work. Further, he shall obtain and submit to the Engineer-in- Charge, a third-party insurance policy for maximum Rs.20 lakh for each accident or any other incident or act of God or health hazard or Biological attack, with the Engineer-in-Charge as the first beneficiary. The insurance shall be obtained in joint names of Engineer-in-Charge and the Contractor (who shall be second beneficiary).

The Contractor shall, from time to time, provide documentary evidence as regards payment of premium for all the Insurance Policies for keeping them valid till the completion of the work. The Contractor shall ensure that Insurance Policies are also taken for the workers of his Sub-Contractors / specialized agencies also. The contractor including subcontractors shall provide comprehensive group insurance cover for all the workers and their supervisory staff deployed at site. The details of insurance cover to be provided shall be submitted by the contractor / associate agencies within 20 days of date of start. In case of a default, appropriate policy shall be got done by the safety monitoring committee and double the fee of the policy shall be recovered from the next bill of the contractor. Without prejudice to any of its obligations and responsibilities specified above, the Contractor shall within 15 days from the date of letter of acceptance of the tender and thereafter at the end of each quarter submit a report to the Department giving details of the Insurance Policies along with Certificate of these insurance policies being valid, along with documentary evidences as required by the Engineer-in-Charge. No work shall be commenced by the Contractor unless he obtains the Insurance Policies as mentioned above. Also, no payment shall be made to the Contractor on expiry of insurance policies unless renewed by the Contractor. Nothing extra shall be payable on this account. No claim of hindrance (or any other claim) shall be entertained from the contractor on these accounts.

14.0. APPLICABLE PERMITS:

14.1 The contractor(s) shall give to the Municipality, police and other authorities all necessary notices etc. that may be required by law and obtain all requisite licenses for temporary obstructions, enclosures etc. and pay all fee, taxes including GST and charges which may be levied on account of these operations in executing the contract. He shall make good any damage to the adjoining property whether public or private and shall supply and maintain lights either for illumination or for cautioning the public at night.

14.2 The contractor shall ensure that applicable permits mandated by the local bodies and in case warranted for this work are obtained as required under the Applicable Laws.

15.0 LOCAL BYE-LAWS:

15.1 The building work shall be carried out in the manner complying in all respects with the requirements of relevant bye-laws of the local body under the jurisdiction of which the work is to be executed or as directed by the Engineer-in-Charge and nothing extra shall be paid on this account.

15.2 Some restrictions may be imposed by the local police etc. on the working time and for movement of labour, materials etc. the contractor shall be bound to follow all such restrictions/instructions and nothing extra shall be payable on this account.

15.3 The contractor shall not stack building material/ malba on the road or on the land owned by any other authority, as the case may be. In case, the Contractor is found stacking the building material/ malba as stated above, he shall be liable to pay the stacking charges as may be levied by local body or authority and also to face penal action as per the rules, regulations and bye-laws of the said body or authority. The Engineer-in-Charge shall be at liberty to recover the sums due but not paid to the concerned authorities on the above counts from any sums due to the contractor including amount of the Security Deposit or Retention Money in respect of this contract or any other contract.

16.0 FINAL TESTING OF THE INSTALLATION:

The Contractor shall demonstrate trouble free functioning of all the Civil and E & M installations and services. The Engineer-in-Charge or his authorized representatives shall carry out final inspection of the various Civil and E & M services and installations. Any defect(s) noticed during demonstration shall be rectified by the Contractor at his own cost to the entire satisfaction of the Engineer-in-Charge. Nothing extra shall be payable on this account.

17.0 De-watering

(i) De-watering required, if any, shall be done conforming to BIS Code IS: 9759 (guide lines for de-watering during construction) and / or as per the specifications approved by the Engineer-in-Charge. Design of an appropriate and suitable dewatering system shall be the Contractor's responsibility. Such scheme shall be modified / augmented as the work proceeds based on fresh information discovered during the progress of work, at no extra cost. At all times during the construction work, efficient drainage of the site shall be carried out by the Contractor and especially during the laying of plain cement concrete, taking levels etc. The Contractor shall also ensure that there is no danger to the nearby properties and installations on account of such lowering of water table. If needed, suitable precautionary measures shall be taken by the Contractor. Also the scheme of dewatering adopted shall have adequate built in arrangement to serve as stand-bye to attend to repair of pumps etc. and disruption of power / fuel supply. Nothing extra shall be payable for all the operations described in this para.

(ii) In trenches where surface water is likely to get into cut / trench during monsoons, a ring bund of puddle clay or by any other means shall be formed

outside, to the required height, and maintained by the Contractor. Also, suitable steps shall be taken by the Contractor to prevent back flow of pumped water into the trench. Nothing extra shall be payable on this account.

a. For works below ground level the contractor shall keep that area free from water. If dewatering or bailing out of water is required the contractor shall do the same at his own cost and nothing extra shall be paid except otherwise provided in the items of Schedule of Quantities.
b. The Contractor shall make all necessary arrangements for protecting from rains, fog or likewise extreme weather conditions, the work already executed and for carrying out further work, during monsoon including providing and fixing temporary shelters, protections etc. Nothing extra shall be payable on this account and also no claims for hindrance shall be entertained on this account.
c. In case of flooding of site on account of rain or any other cause and any consequent damage, whatsoever, no claim financially or otherwise shall be entertained notwithstanding any other provisions elsewhere in the contract agreement. Also, the Contractor shall make good, at his own cost, the damages caused, if any. Further, no claims for hindrance shall be entertained on this account.
d. The contractor will take reasonable precautions to prevent his workman and employees from removing and damaging any flora (plant/vegetation) from the project area.

18.0 ROAD

a. The contractor shall at his own expense and risk arrange land for accommodation of labour, setting up of office, the storage of materials, erection of temporary workshops, construction of approach roads to the site of the work including land required for carrying out of all jobs connected with the execution &completion of the work. However, the departmental land, to the extent available may be allowed to be used for the purpose free of rent without accepting any responsibility for the delay, if any, on this account. The contractor shall have to abide by the regulations of the authorities concerned and the directions of the Officer - in-charge for the use of the land available at the site of work. If during construction, it becomes necessary to remove or shift the stored materials shed, workshop, access roads, etc., to facilitate execution of any other work by any other agency, the contractor shall carry out the removal of shifting as directed by the Officer – in – charge and no claim whatsoever, shall be entertained on this account.

b. It shall be deemed that the contractor has satisfied himself as to the nature and location of the work, transport facilities, availability of land for setting up of camp, etc. the department will bear no responsibility for lack of such knowledge & the consequences thereof.

ADDITIONAL CONDITIONS (Civil Component)

1.1 QUALITY ASSURANCE/TESTING OF MATERIALS: -

1.1.1 Water tanks, taps, sanitary, water supply & drainage pipes, fittings & accessories should conform to bye-laws of local body/corporation, where CPWD specifications are not available. The Contractor (s) should engage approved, licensed plumbers for the work and get the materials (fixtures/fittings) tested, by the municipal Body/Corporation authorities wherever required at his own cost. The Contractor shall submit for the approval of the Engineer-in-Charge, the name of the plumbing agency (along with their working experience in recent past) proposed to be engaged by him.

1.1.2 With each Running Bill, the details of test carried out shall be submitted by the contractor as per Performa given in the tender document.

1.1.3 **Testing charges to be borne by Contractor.**

Samples of materials required for testing shall be provided free of charge by the contractor. The contractor shall provide at his own cost suitable weighing and measuring arrangements at site for checking the weight / dimension as may be necessary. All expenditure to be incurred for testing of samples i.e. packing, sealing, transportation, loading, unloading etc., including testing charges shall be borne by the Contractor.

1.1.4 The Contractor shall at his own risk and cost make all arrangements and shall provide all such facilities including material and labour, the Engineer-in-Charge may require for collecting, preparing, forwarding the required number of samples for testing as per the frequency of test stipulated in the contract specifications or as considered necessary by the Engineer-in-Charge, at such time and to such places, as directed by the Engineer-in-Charge. Nothing extra shall be payable for the above.

1.1.5 The Contractor or his authorized representative shall associate in collection, preparation, forwarding and testing of such samples. In case he or his authorized representative is not present or does not associate him, the result of such tests and consequences thereon shall be binding on the Contractor. The Contractor or his authorized representative shall remain in contact with the Engineer-in–Charge or his authorized representative associated for all such operations. No claim of payment or claim of any other kind, whatsoever, shall be entertained from the Contractor.

1.1.6 **Maintenance of Register of Tests**: -

(i) All the registers of tests carried out a Construction Site or in outside laboratories shall be maintained by the contractor which shall be issued to the contractor by Engineer-in-Charge.

(ii) All Samples of materials including Cement Concrete Cubes shall be taken jointly with Contractor by representative of the Engineer in Charge. All the assistance shall be provided by the contractor. Cost of sample materials is to be borne by the contractor and he shall be responsible for safe custody of samples to be tested at site.

(iii) All the test in field lab setup at Construction Site shall be carried out by the Engineering Staff deployed by the contractor which shall be 100% witnessed by representative of the Engineer in Charge.

(iv) All the entries in the registers will be made by the designated Engineering Staff of the contractor and same should be regularly reviewed by Engineer in Charge or his representative.

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

1.2 FIELD LABORATORY

The contractor has to establish within 21 days from the award of work a field laboratory at site including all necessary equipments and skilled manpower for the **Field Tests as indicated in the tender document at his own cost to have proper quality control. Rs.1,000/-per day shall be recovered from the contractor for any delay beyond the specified period.** If contractor fails to establish lab within additional period of 15 days, the Engineer in charge shall initiate action as deemed fit under relevant clauses of the agreement.tm

For performing the above tests, the **Field Testing Equipments and Instruments as indicated in the tender document** are to be arranged and maintained by the contractor at his own cost.

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

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

1.3 SAMPLE OF MATERIALS: -

1.3.1 All materials and fittings brought by the contractor to the site for use shall conform to the samples approved by the Engineer-in-Charge which shall be preserved till the completion of the work. If a particular brand of material is specified in the item of work in Schedule of Quantity, the same shall be used after getting the same approved from Engineer-in-Charge. Wherever brand / quality of material is not specified in the item of work, the contractor shall submit the samples as per List of Approved Makes given in the tender document for approval of Engineer-in-Charge. For all other items, ISI Marked materials and fittings shall be used with the approval of Engineer-in-Charge. Wherever ISI Marked material / fittings are not available, the contractor shall submit samples of materials / fittings manufactured by firms of

repute conforming to relevant Specifications or IS codes for the approval of Engineer-in-Charge.

1.3.2 The Contractor shall procure and provide all the materials from the manufacturers / suppliers as per the list attached with the tender documents, as per the item description and particular specifications for the work. The equivalent brand for any item shall be permitted to be used in the work, only when the specified make is not available. This is, however, subject to documentary evidence produced by the contactor for non-availability of the brand specified and also subject to independent verification by the Engineer-in-Charge. In exceptional cases, where such approval is required, the decision of Engineer-in-Charge as regards equivalent make of the material shall be final and binding on the Contractor. No claim, whatsoever, of any kind shall be entertained from the Contractor on this account. Nothing extra shall be payable on this account. Also, the material shall be procured only after written approval of the Engineer-in-Charge.

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

1.3.4 BIS marked materials except otherwise specified shall also be subjected to quality test besides testing of other materials as per the specifications described for the item/material. Wherever BIS marked materials are brought to the site of work, the contractor shall, furnish manufacturer's test certificate or test certificate from approved testing laboratory to establish that the material procured by the contractor for incorporation in the work satisfies the provisions of specifications relevant to the material and / or the work done.

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

1.3.5 For certain items, if frequency of tests is neither mentioned in the CPWD Specifications nor BIS, then tests shall be carried out as per directions of Engineer-in-Charge.

2.0 CEMENT & STEEL REINFORCEMENT

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

2.2 CEMENT: -

2.2.1 The contractor shall procure 43 grade ordinary Portland Cement (OPC) conforming to IS: 8112 / Portland Pozzolana Cement (PPC) conforming to IS: 1489 (Part-1) as required in the work as per specifications/particular specifications of buildings from reputed manufacturers of cement as mentioned in "List showing preferred brands / Manufacturers / Makes" or from any other reputed cement manufacture having a production capacity not less than 1 million Ton per annum as approved by the Competent Authority. The cement of approved make as aforesaid in 50 kg bags bearing manufacturer's name and ISI marking, along with manufacturers test certificate for each lot shall be procured by the contractor. Portland Pozzolana Cement is to be used for RCC works only subject to fulfillment of conditions of circular No. CDO/SE (RR)/Fly ash (MAN) 02 dated 09.04.09. However, if the contractor uses higher grade of cement or uses OPC only nothing extra shall be paid. The use of PPC shall be regulated as per the following conditions stipulated in the circular dated 09.04.2009: -

a. IS:456-2000 Code of Practice for Plain and Reinforced Concrete (as amended upto date) shall be followed in regard to Concrete Mix Portion and its production as under:

   i) The concrete mix design shall be done as "Design Mix Concrete" as prescribed in clause-9 of IS 456 mentioned above.

   ii Concrete shall be manufactured in accordance with clause 10 of above mentioned IS:456 covering quality assurance measures both technical and organizational, which shall also necessarily require a qualified Concrete Technologist to be available during manufacture of concrete for certification of quality of concrete.

b. Minimum M-30 grade of concrete shall be used in all structural elements of RCC, both in load bearing and framed structure.

c. The mechanical properties such as modulus of elasticity, tensile strength, creep and shrinkage of fly ash mixed concrete or concrete using fly ash blended cements (PPCs) are not likely to be significantly different and their values are to be taken same as those used for concrete made with OPC.

d. To control higher rate of carbonation in early ages of concrete both in fly ash admixed as well as PPC based concrete, water/binder ratio shall be kept as low as possible, which shall be closely monitored during concrete manufacture.

   If necessitated due to low water / binder ratio, required workability shall be achieved by use of Chloride free chemical admixtures conforming to IS : 9103. The compatibility of chemical admixtures and super plasticizers with each set of OPC, fly ash and / or PPC received from different sources shall be ensured by trails.

e. In environment subjected to aggressive chloride or sulphate attack in particular, use of fly ash admixed or PPC based concrete is recommended. In case, where structural concrete is exposed to excessive magnesium sulphate, fly ash substitution/content shall be limited to 18% by weight. Special type of cement with low C_3A content may also be alternatively used. Durability criteria like minimum binder content and maximum water/binder ratio also need to be given due consideration in such environment.

f. Wet curing period shall be enhanced to a minimum of 10 days or its equivalent. In hot & arid regions, the minimum curing period shall be 14 days or its equivalent.

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

h. Till the time, BIS makes it mandatory to print the %age of fly ash on each bag of cement, the certificate from the PPC manufacturer indicating the same shall be insisted upon before allowing use of such cements in works.

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

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

2.2.3 Cement shall be brought at site in bulk supply of approximately 200 tones or as decided by the Engineer-in-Charge.

2.2.4 OPC &PPC bags shall be stored in separate godowns. Separate godowns for tested cement and fresh cement (under testing) to be constructed by the contractor at his own cost as per sketches given in C.P.W.D Specifications having weather-proof roofs and walls. The size of the cement godown is indicated in the sketches for guidance. The actual size of godown shall be as per site requirements and nothing extra shall be paid for the same. Each godown shall be provided with a single door with two locks. The keys of one lock shall remain with Engineer-in-Charge or his authorized representative of the work and that of other lock with the authorized agent of the contractor at the site of work so that the cement is issued from godown according to the daily requirement with the knowledge of both parties. The account of daily receipt and issue of cement shall be maintained in a register in the prescribed proforma and signed daily by the contractor or his authorized agent and

Engineer-in-Charge or his authorized representative in token of its correctness. The day to day receipt and issue accounts of different grade/brand of cement shall be maintained separately in the standard proforma by the contractor or his authorized representative which shall be duly signed by the authorized representative of the Engineer-in-Charge before issue to the work on day to day basis.

Required number of cement godowns each having capacity as decided by the Engineer-in-Charge shall be constructed by the contractor at site of work for which no extra payment shall be made. The contractor shall be responsible for the watch and ward and safety of the cement go-downs. The contractor shall facilitate the inspection of the cement go-downs by the Engineer-in-Charge at any time.

The register should be issued by the EE and each page should be machine numbered. The cement godown and the register are required to be checked by the AE/EE in-charge of the work as mentioned below: -

a. At least weekly or fortnightly, respectively in case of works located at the headquarters of AE/EE and.

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

c. In the case of large concentrated projects like major bridges etc., the EE should check the cement register at least fortnightly.

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

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

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

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

2.2.8 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.

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

2.2.10 In case cement has been stored for over six (06) months from the date of manufacture or for any reason the stored cement shown sign of deterioration and contamination it shall be tested prior to use in the work.

The sample shall be taken within three weeks of the delivery and all the tests shall be commenced within one week of sampling and not later than 03 months from the receipt of sample for testing.

After completion of previous test if cement is stored more than 03 months, it shall be retested before use.

2.2.11 **Compressive Strength of Cement**

The average compressive strength of at least three mortar cubes (area of face 50 cm^2) composed of one part of cement, three parts of standard sand (conforming to IS 650:1996) by mass and P/4+3.0 percent (of combined mass of cement plus sand) water, and prepared, stored and tested in the manner described in IS 4031 (Part 6): 1988, shall be as follows:

a) 72±1 hour not less than 23 MPa
b) 168±2 hour not less than 33 MPa
c) 672±4 hour not less than 43 MPa

NOTE: - P is the percentage of water required to produce a paste of standard consistency (see as below)

Consistency of Standard Paste: -

The quantity of water required to produce a paste of standard consistency, to be used for the determination of the water content mortar for the compressive strength tests and for the determination of soundness and setting time, shall be obtained by the method described in IS 4031 (part 4) : 1988.

2.3 STEEL REINFORCEMENT: -

2.3.1 The Contractor shall procure IS marked low Alloy steel reinforcement bars of grade Fe-500 D or more from the approved steel manufacturers as per list of approved makes forming part of this document or their authorized dealers having valid BIS license for IS: 1786-2008 and further confirming to the **OM No. CSQ/SE(TAS)/Steel/2024/262(H) dated 14.08.2024.**

The procured steel should have following qualities:

i. Excellent ductility, bend ability and elongation of finished product due to possible refining technology.
ii. Consumption of steel should be accurate as per design

iii. Steel should have no brittleness problem in finished product.
iv. Steel should carry the quality of corrosion and earthquake resistance.
v. Quality steel with achievement of proper level of Sulphur and phosphorus as per IS: 1786-2008.

2.3.2 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.

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

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

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

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

Size of bar	**For consignment below 100 tonnes**	**For consignment above 100 tonnes**
Under 10mm dia bars	One sample for each 25tonnes or par thereof.	One sample for each 40tonnes or part thereof.
10mm to 16mm dia bars	One sample for each 45tonnes or part thereof.	One sample for each 50tonnes or part thereof.
Over 16mm dia bars	One sample for each 50tonnes or part thereof.	One sample for each 75tonnes or part thereof.

2.3.7 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.

2.3.8 The actual issue and consumption of steel on work shall be regulated and proper accounts shall be 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 is less than theoretical consumption including permissible variations leading to under designing of the structure, the work shall be summarily rejected, otherwise recovery at the rate so prescribed shall be made after ensuring structural

soundness and stability.. In case of excess consumption, no adjustment needs to be made.

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

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

2.3.11 Reinforcement including authorized spacer bars and laps shall be measured in length of different diameters as actually (not more than as specified in the drawings) used in the work nearest to a centimeter. Wastage and unauthorized overlaps shall not be measured.

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

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

2.3.14 (a) If the Derived Weight as in sub-para (2.3.13) above is less than the Standard Weight as in Sub-para (2.3.12) above then the Derived Actual Weight shall be taken for payment provided, if it is within the following tolerances specified in IS1786-2008, otherwise whole lot will be rejected.

Tolerances on Nominal Mass

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

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

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

c) If the Derived Actual Weight is found more than the Standard Weight, the Standard Weight as per in sub-para (2.3.12) above shall be taken for payment. In such case nothing extra shall be paid for the difference between the Derived Actual Weight and the Standard Weight.

2.4 SAFETY IN CONSTRUCTION

2.4.1 The contractor shall employ only such methods of construction, tools and plants as are appropriate.

2.4.2 The contractor shall take all precautions and measures to ensure safety ofworks and work man and shall be fully responsible for the same.

2.4.3 Safety pertaining to construction such as centering & shuttering, scaffolds, ladders, working platforms, gangway etc. shall be governed by CPWD safety code, relevant safety codes and the directions of Engineer in charge.

2.4.4 All the staging to be either of tubular steel structure with adequate bracings as approved or made of built-up structural sections made from rolled structural steel sections.

2.4.5 Form work shall be properly designed for self-weight, weight of reinforcement, weight of fresh concrete and in addition the various live loads likely to be imposed during construction process.

2.4.6 The form work shall be designed & constructed so as to remain sufficiently rigid during placing & compaction of concrete & shall be such as to prevent loss of slurry from the concrete.

2.4.7 The vertical supports shall be adequately braced or otherwise secured in position that these do not fall when the load gets released or the supports are accidentally hit.

2.4.8 A thorough inspection of tubular steel centering is necessary before its erection and members showing evidence of excessive rusting, kinks, dents or damaged welds shall be discarded. Buckled or broken members shall be replaced. Care shall also be taken that locking devices are in good working order and that coupling pins are effectively aligned to frames. Tubes should have end to end joints in adjacent tubes staggered. Sleeve couplers should be used in preference to joint pins for axial connections.

2.4.9 Inclined forms which give rise to very high horizontal forces should be taken care of by trussing and diagonal bracing

2.4.10 Vertical members should be placed centrally under the members to be supported and over the member supporting them with no eccentricity exceeding 25mm

2.4.11 The centering frames shall be tied together with sufficient braces to make a rigid and solid unit. It shall be ensured that struts and diagonal braces are in proper position and are secured so that frames develop full load carrying capacity. As erection progresses, all connecting devices shall be in place and shall be fastened for full stability of joints and units.

2.4.12 Wedges under the supports shall be set on firm soil / PCC which assures adequate stability for all props. Care shall be taken not to disturb the soil under the supports. Adequate drainage shall be provided to drain away the water coming due to rains, easing of forms or during the curing of the concrete to avoid softening of the supporting soil strata.

2.4.13 During pouring of the concrete the centering shall be constantly inspected and strengthened, if required wedges below the vertical supports tightened and adjustment screws properly adjusted as necessary.

2.4.14 Only workmen actually engaged in the form work shall be allowed in the area during operations. Those engaged in removing the form work shall wear helmets, gloves and heavy soled shoes and approved safety belts etc.

2.4.15 The safety code as lay down in respective clauses of Agreement shall be strictly followed.

PARTICULAR SPECIFICATIONS

(Civil Component)

1. GENERAL

1.1 The work shall be carried out as per CPWD Specifications 2019 Vol. I & II with upto date correction slips.

1.2 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).

1.3 Wherever any reference to any Indian Standard Specification occurs in the documents relating to this contract, the same shall be inclusive of all amendments issued thereto or revisions thereof, if any.

1.4 Unless otherwise specified in the schedule of quantities the rates for all items of the work shall be considered as inclusive of pumping out or bailing out water if required for which no extra payment will be made. This will include water encountered from any source, such as rains, floods, and sub-soil water table being high due to any other cause whatsoever.

1.5 Unless otherwise specified in the schedule of quantities, particular specifications or CPWD specifications (subject to the order or preference) the rates tendered by the tenderer shall be all inclusive and shall apply to all lifts, all heights and all floor including terrace, leads and depths and nothing extra over and above the schedule of quantity shall be payable on this account.

1.6 The work shall be carried out in accordance with the Architectural drawings, structural drawings and approved shop drawings. The structural shop and architectural drawings shall have to be properly correlated before executing the work. In case of any difference noticed between architectural and structural drawings, the contractor shall obtain final decision of the Engineer-in-charge. In case of any discrepancy in the item given in the schedule of quantities appended with the tender and architectural drawings related to the relevant items, the former shall prevail unless and otherwise given in writing by the Engineer in charge. Nothing extra shall be payable on this account.

1.7 Wherever any reference to any Indian Standards occurs in the documents relating to this contract, the same shall be inclusive of all amendments issued thereto or revisions thereof, if any, up to the date of receipt of tenders.

1.8 The following additional specifications shall apply:

1.8.1 All stone aggregate and stone ballast shall be of hard stone variety and to be obtained from quarries near& around to site of work, approved by the Department of Mines and as per direction of the Engineer in charge

1.8.2 Coarse sand should be obtained from sand quarries of nearby rivers, approved by the Department of Mines, Govt. of Kerala. and as per direction of the Engineer in charge and to be used for cement concrete work including RCC, mortar for masonry and

plaster work shall be of standard quality and screened as required. It shall be clean sand.

The agency may be permitted at the discretion of Engineer-in Charge to use crushed stone sand/Manufacture sand provided it confirms to grading and other requirements given in CPWD specifications. The change in sand type or source would require revision of Mix Design of Concrete from the approved laboratories any Government Engineering College /Institute, for which nothing extra shall be paid norany extra time will be granted. In case of use of crushed stone sand/Manufacture sand, all necessary precautions for CC work, RCC work, masonry work, plaster work and all other related works shall be taken by the agency as per relevant CPWD specifications and BIS codes without any extra cost.

1.9 The rates for all items of work shall unless clearly specified otherwise include for all floor levels of building and cost of all operations and all inputs of labour, material, T&P, scaffolding, wastages, watch and ward, other inputs, all incidental charges, all taxes, GST, duties, levies etc. required for execution of the work.

1.10 All crossings, embedment etc. in walls and floors for water supply, drainage and sanitary pipes, fittings etc. shall be provided for individual walls and floors so as to avoid cuttings of masonry work and floors. All such areas shall be made good during finishing and nothing extra shall be payable on these accounts.

1.11 Product delivery, storage and handling of chemicals.

1.11.1 The contractor shall construct storage space for Chemicals to ensure that the storage conditions are as recommended by the manufactures.

1.11.2 All the materials shall be procured and delivered in sealed containers with labels legible and intact.

1.11.3 All the chemicals (polymers, epoxy, water proofing compound, plasticizer, Polysulphide, all exterior and interior paints, polish 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 unless otherwise specifically permitted by the Engineer-in-Charge. One sample from each lot of the chemical procured by the contractor shall be tested in a laboratory as approved by the Chief Engineer.

1.11.4 All material required for the execution of the work shall be got approved, procured and deposited with the Departmental supervisory staff. The materials shall be kept 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 this account shall be entertained.

1.11.5 All the chemicals shall be procured by the contractor directly from the manufacturer. In exceptional circumstances, the contractor may be allowed to procure the materials from the authorized dealers of the manufacturers, if specifically permitted by the Engineer-in-Charge.

1.11.6 The original copies of challan / cash memos towards the quantity of various chemicals procured shall be made available by the contractor at the request from the Engineer-in-Charge and a copy of the same shall be kept in record.

1.11.7 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.

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

1.11.9 All filled containers shall be handled in safe manner and in a way to avoid breaking container seals.

1.11.10 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.

1.11.11 All arrangements for measuring, dosing and mixing of material / chemicals at site have to be made by the contractor.

1.11.12 Contractor shall suitably advise his site Engineer and all the workers as regards safe handling of chemicals. Necessary protective and safety equipments in form of hand gloves, goggles etc. shall be provided by the contractor and be also used at site.

1.11.13 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 be entertained on this account.

1.11.14 The chemicals shall be tested in an independent laboratory as approved by the Chief Engineer at the frequency as specified. If required, more samples may have to be tested as per the directions of the Engineer-in-Charge. Nothing extra shall be payable on this account. However, all the testing charges shall be borne by the Contractor.

2 EARTH WORK: -

2.1 Earth work shall be executed as per CPWD specifications.

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

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

2.4 The contractor shall make at his own cost all necessary arrangements for maintaining water level, in the area where works are under execution low enough so as not to cause any harm to the works or problems in carrying out with the execution and the rates for all items of work shall be considered as inclusive of pumping out or bailing out water, if required and for which no extra payment shall be made. This will include water coming from any source, such as rains, accumulated rain water, floods, leakages from sewer and water mains subsoil water table being high or due to any other cause whatsoever. The contractor shall make necessary provision of pumping, dredging, bailing out water coming from all above sources and excavation and other works shall be kept free of water by providing suitable system approved by the Engineer-in-Charge.

2.5 De-watering required, if any, shall be done conforming to BIS Code IS: 9759 (guide lines for de-watering during construction) and / or as per the specifications approved by the Engineer-in-Charge. Design of an appropriate and suitable dewatering system shall be the Contractor's responsibility. Such scheme shall be modified / augmented as the work proceeds based on fresh information discovered during the progress of work, at no extra cost. At all times during the construction work, efficient drainage of the site shall be carried out by the Contractor and especially during the laying of plain cement concrete, taking levels, etc. The Contractor shall also ensure that there is no danger to the nearby properties and installations on account of such lowering of water table. If needed, suitable precautionary measures shall be taken by the Contractor. Also, the scheme of dewatering adopted shall have adequate built-in arrangement to serve as stand-bye to attend to repair of pumps etc. and disruption of power / fuel supply. Nothing extra shall be payable on this account.

2.6 In trenches where surface water is likely to get into cut / trench during monsoons, a ring bund of puddle clay or by any other means shall be formed outside, to the required height, and maintained by the Contractor. Also, suitable steps shall be taken by the Contractor to prevent back flow of pumped water into the trench. Nothing extra shall be payable on this account.

3.0 R.C.C. WORK: -

3.1 Design Mix Concrete.

3.1.1 The term machine batched, machine mixed and machine vibrated design mix cement concrete used in the document shall mean the concrete produced in fully automatic concrete batching & mixing plant, placed in position by the concrete pump and vibrated by surface vibrator/ needle vibrator/ plate vibrator, as the case may be to achieve the required strength and durability.

The RCC work shall be done with Design Mix Concrete. Wherever letter "M" has been indicated, the same shall imply for the Design Mix Concrete. The Design Mix Concrete will be designated based on the principles given in IS: 456, 10262 & SP 23. The Conditions & Specifications stated herein shall have precedence over all conditions & specifications stated in relevant I.S. Codes / C.P.W.D. Specifications. The concrete mix shall be designed for the specified target mean compressive

strength in order to ensure that work test result do not fall below the acceptance criteria specified for the concrete mix. The cement shall be actually weighed as presumption of each bag having 50kg shall not be allowed. The Contractor shall design mixes for each class of concrete indicating that the concrete ingredients and proportions will result in concrete mix meeting the requirements specified. Nothing extra shall be paid on this account.

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

(b) Admixture may be added in case of specific technical requirement so as to meet the workability / slump requirement or for any other reason but nothing extra is to be paid to contractor on account of adding admixtures. The admixture shall conform to IS: 9103. The chloride content in admixture shall satisfy the requirement of BS: 5075. The total amount of chlorides in admixture mixed concrete shall also satisfy the requirements of IS: 456:2000. Admixtures shall not be used without approval of Engineer-in-Charge. Whenever required, the admixture of approved quality & approved make only shall be used to attain the required workability. Nothing extra on account of use of Admixture / Plasticizer shall be payable.

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

3.2 GENERAL INFORMATION FOR READY MIX CONCRETE (RMC) TO BE GIVEN TO THE SUPPLIER BY THE CONTRACTOR

3.2.1 The contractor shall bring Ready Mix Concrete from approved RMC plants as mentioned in the list showing preferred Brands/ Manufacturers/Makes enclosed in this NIT. The contractor has to produce text of MOU proposed to be entered between purchaser (the contractor) and supplier (R.M.C. plant) to the Engineer-in-charge. The Engineer-in-charge shall give approval in writing. The contractor shall draw the MOU with approved RMC plant owner / company and submit to Engineer-in-charge within a week of such approval. The contractor will not be allowed to purchase ready mixed concrete without completion of above stated formalities for use in this project.

3.2.2 Notwithstanding the approval granted by Engineer-in-charge in aforesaid manner, the contractor shall be fully responsible for quality of concrete including input control, transportation and placement etc.

3.2.3 The Engineer-in-charge will reserve right to inspect at any such stage and reject the concrete if he is not satisfied about quality of product. The contractor should therefore draw MOU / agreement with RMC owner / company very carefully keeping all terms and conditions / specifications forming a part of this tender document.

(i) The Engineer-in-charge reserves the right to exercise control over the ingredients, water and admixtures purchased, stored and to be used in the

concrete including conducting of tests for checking quality of materials, recordings of test results and declaring the materials fit or unfit for use in production of mix.

(ii) Calibration check of the RMC.

(iii) Weight and quantity check on the ingredients, water and admixtures added for batch mixing.

(iv) Time of mixing of concrete.

(v) Testing of fresh concrete, recordings of results and declaring the mix fit or unfit for use. This will include continuous control on the workability during production and taking corrective action.

3.2.4 For exercising such control, the Engineer-in-charge shall periodically depute his authorized representative at the RMC plant. It shall be responsibility of the contractor to ensure that all necessary equipment manpower & facilities are made available to E-in-C and/ or his authorized representative at RMC plant.

3.2.5 Ingredients, admixtures & water declared unfit for use in production of mix shall not be used. A batch mix found unfit for use shall not be loaded into the truck for transportation.

3.2.6 All required relevant records of RMC shall be made available to the Engineer-in-charge or his authorized representative. The E-in-C shall, as required, specify guidelines & additional procedures for quality control & other parameters in respect of materials and production & transportation of concrete mix, which shall be binding on the contractor & the RMC plant.

3.3 Ingredients:

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

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

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

(c) **Water: -** It shall conform to requirements laid down in IS:456-2000 / Para 3.1.1 of CPWD Specifications (Vol. I 2019)

(d) **Cement: -** Portland Pozzolana Cement (Fly Ash based) conforming to IS: 1489/ OPC of grade 43 shall confirm to IS: 269, required in the work from reputed manufacturers of cement as per the approved make in 50 kg. bags bearing manufacturer’s name and ISI marking, along with manufacturers test certificate for each lot. Portland Pozzolana Cement is to be used for RCC works only subject to fulfillment of conditions of circular number CDO / SE (RR) / fly ash (MAN) 02 dated 09.04.09 shall be used for design mix concrete and shall conform to IS-1489 (Part I). However, if the contractor uses higher grade of cement nothing extra shall be paid.

(e) **Admixture/ Plasticizer:-** The admixture shall conform to IS: 9103. The chloride content in admixture shall satisfy the requirement of BS: 5075. The total amount of chlorides in admixture mixed concrete shall also satisfy the requirements of IS: 456:2000. Admixtures shall not be used without approval of Engineer-in-Charge. Whenever required, the admixture of approved quality & approved make only shall be used to attain the required workability. Nothing extra on account of use of Admixture / Plasticizer shall be payable.

3.4. WATER CEMENT RATIO AND SLUMP

3.4.1 In proportioning a particular mix, the manufacturer/producer/contractor shall give due consideration to the moisture content in the aggregates, and the mix shall be so designed as to restrict the maximum free water cement ratio to less than the 0.45.

3.4.2 Due consideration shall be given to the workability of the concrete thus produced. Slump shall be controlled on the basis of placement in different situations.

Placing Conditions	Degree of Workability	Slump (mm)
(1)	(2)	(3)
Lightly reinforced sections in slabs, beams, walls, columns	Low	25-75
Heavily reinforced section in slabs, beams, walls, columns.	Medium	50-100
Pumped concrete	Medium	75-100

3.5 CHARACTERISTIC COMPRESSIVE STRENGTH COMPLIANCE REQUIREMENT

In the designation of concrete mix letter M refers to the mix and the number to the specified characteristic compressive strength of 15 cm – Cube at 28 days expressed in N/mm2.

Specified Grade	**Mean of the Group of 4 Non-overlapping consecutive test results in N/mm2**	**Individual Test Results in N/mm2**
(1)	(2)	(3)
M25 Or Above	≥ F_{ck} + 0.825 x established standard deviation (rounded off to nearest 0.5 N/mm^2) Or F_{ck} + 4 N/mm^2, whichever is greater where f_{ck} is characteristic compressive strength of CC cube at 28 days.	≥ F_{ck} – 4 N/mm^2

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

(ii) The acceptance criteria for compressive strength as mentioned in IS:456- 2000 as amended upto date shall prevail over the above criteria in case of any difference.

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

The contractor shall submit at his own cost, the mix design report from approved laboratories such as any Government Engineering College /Institute for approval of Engineer-in-charge within 30 days from the date of issue of letter of acceptance of the tender. No concreting shall be done until the mix design is approved. Every time sources of materials/cement is changed mix design report shall be got re- done and has to be got approved from Engineer In charge.

The various ingredients for mix design / laboratory tests shall be sent to the lab/ test houses through the Engineer-in-charge and the samples of such aggregates sent shall be preserved at site by the department. Nothing extra shall be paid on this account.

In the event if all the above laboratories are unable to carry out the requisite design/ testing, the contractor may have it done from any other NABL accredited laboratory with prior approval of the Superintending Engineer-Calicut.

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

3.8 In case of change of source or characteristic properties of the ingredients used in the concrete mix design during the work, the contractor as per the directions of the Engineer-in-charge shall submit a revised concrete mix design report conducted at laboratory established at site. Nothing extra shall be paid on this account.

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

3.10 The mix design for a specified grade of concrete shall be done for a target mean compressive strength Tck = Fck + 1.65s

Where Fck = Characteristic compressive strength at 28 days.

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

The degree of Quality Control for this work is “good” for which the standard deviation obtained for different grades of concrete shall be as follows: -

GRADE OF CONCRETE	STANDARD DEVIATION
M-25	4.0
M-30	5.0
M-35	5.0
M-40	5.0

However, actual standard deviation based on test strength of samples for each grade of concrete shall be calculated separately as per procedure laid down in clause 9.2.4 of Code of Practice IS 456:2000.

3.10.1 **TRIAL BATCHES**

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

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

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

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

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

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

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

3.10.2 APPROVAL OF DESIGN MIX

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

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

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

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

3.11 DESIGN MIX CONCRETE FROM FULLY AUTOMATIC COMPUTERISED CONCRETE BATCHING AND MIXING PLANT

Proportioning Concrete

In proportioning cement concrete, the quantity of both cement and aggregates shall be determined by weight. The cement shall be weighed separately from the aggregates. Water shall either be measured by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in a clean and serviceable condition. The amount of mixing water shall be adjusted to compensate for moisture content in both coarse and fine aggregates. The moisture content of aggregates shall be determined in accordance with IS: 2386 (Part III). Suitable adjustments shall also be made in the weights of aggregates to allow for the variation in weight of aggregates due to variation in moisture content.

3.11.1 Production of Concrete

3.11.1.1 The concrete shall be produced in a central batching and mixing plant with, computerized printing for contents and admixture dosage. The batching plant shall be fully automatic. Automatic batcher shall be charged by devices which, when actuated by a Single starter switch will automatically start the weighing operation of each material and stop automatically, when the designated weight of each material has been reached. The batching plant shall have automatic arrangement for dispensing the admixture and shall also be capable of discharging water in more than one stage. A print out from the batching plant for every lot shall be submitted. A batching plant essentially shall consist of the following components: Separate storage bins for different sizes of aggregates, silo for cement; and water storage tank.

- Batching equipment
- Mixers
- Control panels
- Mechanical material feeding and elevating arrangements

3.11.1.2 The compartments of storage bins for aggregates shall be approximately of equal size. The cement compartment shall be centrally located in the batching plant. It shall be watertight and provided with necessary air vent, aeration fittings for proper flow of cement & emergency cement cut off gate. The aggregate and sand shall be charged by power operated centrally revolving chute. The entire plant from mixer floor upward shall be enclosed and insulated. The batch bins shall be constructed so as to by self-cleansing during drawdown. The batch bins shall in general conform to the requirements of IS: 4925.

3.11.1.3 WATER:

1. Water to be used in manufacturing and curing of Concrete shall be tested before use. All such tests shall be submitted to the Engineer in charge forhis approval before water is used in work.
2. Contractor shall identify the location of source of water intended to be used. Each such source of water shall be separately tested. In the event of a change in source of water all tests specified herein shall have to be repeated.

3. In the event of water is drawn from tube wells or open wells, water samples shall be for seasonal fluctuations in water table or at intervals to be directed by the Engineer in charge.

1. Water samples from each source shall be tested as under:

   One test at commencement of work for approval of each source and there after change of source and

   Thereafter, water from each source shall be got tested during the dry season before monsoon and again after the monsoon.

   Time period between two tests shall not exceed six months.

2. Approved quality water shall be collected and stored in the Under Ground sumps/elevated tanks for the day to day requirement of work and same shall be used for all cement works and also for curing. Due care shall be taken in this regard.

3.11.1.4 The batching equipment shall be capable of determining and controlling the prescribed amounts of various constituent materials for concrete accurately i.e., water, cement, sand, individual size of coarse aggregates etc. The accuracy of the measuring devices shall fall within the following limits.

Measurement of Cement	±2% of the quantity of cement in each batch
Measurement of Water	±3% of the quantity of water in each batch
Measurement of Aggregate	±3% of the quantity of aggregate in each batch
Measurement of Admixture	±3% of the quantity of admixture in each batch

3.11.1.5 Mixing Concrete

The mixer in the batching plant shall be so arranged that mixing action in the mixers can be observed from the operator's station. The mixer shall be equipped with a mechanically or electrically operated timing, signaling and metering device which will indicate and assure completion of the required mixing period. The mixer shall have all other components as specified in IS: 4925.

3.11.1.6 Transportation, Placing and Compaction of Concrete

3.11.1.6.1 Mixed concrete from the batching plant shall be transported to the point of placement by transit mixers or through concrete pumps or steel closed bottom buckets capable of carrying 0.6 cum concrete. In case the concrete is proposed to be transported by transit mixer, the mixer speed shall not be less than 4 rev/ min. of the drum nor greater than a speed resulting in a peripheral velocity of the drum as 70 m / minute at its largest diameter. The agitating speed of the agitator shall be not less than 2 rev / min. nor more than 6 rev / min. of the drum. The number of revolutions of the mixing drum or blades at mixing speed shall be between 70 to 100 revolutions for a uniform mix, after all ingredients, have been charged into the drum. Unless tempering water is

added, all rotation after 100 revolutions shall be at agitating speed of 2 to 6 rev / min. and the number of such rotations shall not exceed 250. The general construction of transit mixer and other requirements shall conform to IS: 5892.

3.11.1.6.2 In case concrete is to be transported by pumping, the conduit shall be primed by pumping a batch of mortar / thick cement slurry through the line to lubricate it. Once the pumping is started, it shall not be interrupted (if at all possible) as concrete standing idle in the line is liable to cause a plug. The operator shall ensure that some concrete is always there in the pump-receiving hopper during operation. The lines shall always be maintained clean and shall be free of dents.

3.11.1.6.3 Materials for pumped concrete shall be batched consistently and uniformly. Maximum size of aggregate shall not exceed one-third of the internal diameter of the pipe. Grading of aggregate shall be continuous and shall have sufficient ultra-fine materials (materials finer than 0.25mm). Proportion of fine aggregates passing through 0.25mm shall be between 15 & 30% and that passing through 0.125 mm sieve shall not be less than 5% of the total volume of aggregate. When pumping long distances and through hot weather, set-retarding admixtures may be used. Admixtures to improve workability can be added. Suitability of concrete shall be through pumping shall be verified by trial mixes and by performing pumping tests.

3.12 PREPARATION OF MIXES AS PER APPROVED DESIGN MIX AND CONDUCTING CONFIRMATORY TEST AT FIELD LAB.

3.12.1 The contractor shall make the cubes of trial mixes as per approved Mix design at site laboratory for all grades, in presence of Engineer in charge using sample of approved materials proposed to be used in the work prior to commencement of concreting and get them tested in his presence to his entire satisfaction for 7 days and 28 days. Test cubes shall be taken from trial mixes as follows.

3.12.2 For each mix, a set of six cubes shall be made from each of the three consecutive batches. Three cubes from each set of six shall be tested at age of 7 days and remaining three cubes at age of 28 days. The cubes shall be made, cured, transported and tested strictly in accordance with specifications. The average strength of nine cubes at age of 28 days shall exceed the specified target mean strength for which design mix has been approved, the evaluation of test results will be done as per IS: 456-2000.

3.12.3 Frequency of Sampling

3.12.3.1 *Sampling Procedure* engaged for

A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested that is the sampling should be spread over the entire period of concreting and cover all mixing units.

3.12.3.2 Frequency

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

Quantity of Concrete in the Work, m3	***Number of Samples***
I -10	1
11 - 30	2
31 -60	3
61- 100	4
101 and above	4 plus one additional sample for each additional 50 m3 or part thereof

NOTE- *Each sample shall be adequate quantity so that a minimum of 3 specimen cubes can be made. Test of the sample is to be done in accordance with IS: 516 (Minimum Quantity : 10 cum).*

3.12.4 Test Specimen

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

3.12.5 Test Results of Sample

The test results of the sample shall be the average of the strength of three specimen. The individual variation shall not be more than +/- 15 percent of the average. If more, the test results of the sample are invalid. 90% of the total tests shall be done at the laboratory established at site by the contractor and remaining 10% in the laboratory as mentioned in para 3.6, or in any other NABL accredited laboratory as directed by the **Superintending Engineer, CPWD, Calicut**.

3.12.6 ACCEPTANCE CRITERIA

3.12.6.1 Compressive Strength

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

a) The mean strength determined from any group of four consecutive test results complies with the appropriate limits in col 2 of Table given under para 3.5 above.

b) Any individual test result complies with the appropriate limits in col 3 of Table given under para 3.5 above.

3.12.6.2 Quantity of Concrete Represented by Strength Test Results

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

Where the mean rate of sampling is not specified the maximum quantity of concrete that four consecutive test results represent shall be limited to 60 m^3.

3.12.6.3 Concrete of each grade shall be assessed separately.

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

3.13 SPECIAL CONDITIONS FOR DESIGN MIX CONCRETE

1 The term machine batched, machine mixed and machine vibrated design mix cement concrete used in the document shall mean the concrete produced at site in fully automatic concrete batching & mixing plant (IS 4925), placed in position by the concrete pump and vibrated by surface vibrator/ needle vibrator/ plate vibrator, as the case may be to achieve required strength and durability. (However, for small elements like lintels, chajjas, shelves etc., the requirement of pumping would be dispensed with as per direction of Engineer – in – charge and placement would be done through alternative means).

2. Design mix concrete shall be used in the work for all structural members. For design mix concrete revised CPWD specifications 2019 along with relevant IS codes shall be followed in general along with the specific provisions made herein.

3. Following parameters shall be adopted for mix design.

Grade of Concrete	**M25**	**M30**	**M40**
(i) Nominal Max size of aggregate	20 mm angular as per CPWD specification	20mm angular as per CPWD specification	20 mm angular as per CPWD specification
ii) Degree of workability (Slump) mm a) Without Pump b) With Pump	 25 to 75mm 75 to 100 mm	 25mm to 75mm 75mm to 100 mm	 25 to 75 mm 75 mm to 100 mm
(iii) Degree of quality control	Good.	Good.	Good.
(iv) Type of exposure	Severe	Severe	Severe
(v) Max free water cement/ ratio	0.45	0.45	0.40
(vi) Minimum	330kg/cum and as	350 kg/cum and as	390 kg/cum and as

Cement Content	specified in the item.	specified in the item.	specified in the item.
(vii) Fine Aggregate	Coarse sand as per CPWD specifications.	Coarse sand as per CPWD specifications.	Coarse sand as per CPWD specifications.
(viii) Mix applicable	Plain/Reinforced cement concrete	Plain/Reinforced cement concrete	Plain/Reinforced cement concrete
(ix) Method application	Pumping	Pumping	Pumping
(x) Max Cement content	500 kg/Cum	500 kg/Cum	500 /Cum
(xi) a) Characteristic compressive strength compliance requirement. (Mean of group of 4 non-overlapping tests and consecutive test) (N/Sqmm)	Greater than or equivalent to f_{ck}+0.825xEstablished standard deviation Or F_{ck}+3whichever is more	Greater than or equivalent to f_{ck}+0.825xEstablished standard deviation Or F_{ck}+4whichever is more	Greater than or equivalent to f_{ck}+0.825xEstablished standard deviation Or F_{ck}+4whichever is more
b) Individual test (N/Sqmm)	F_{ck}-3	F_{ck}-4	F_{ck}-4

Design parameters for M 10 & M15 Design mix concrete

Following parameters shall be adopted for mix design.

Sl. No.	Grade of Concrete	M10	M15
1	Nominal Max size of aggregate	20 mm angular as per CPWD specification	20 mm angular as per CPWD specification
2	Degree of workability (Slump) mm	25 - 75	25 - 75
3	Degree of quality control	Good.	Good.
4	Type of exposure	Severe	Severe.
5	Max free water cement/ ratio	0.50	0.50
6	Type of cement used	Portland Pozzolana cement or OPC- 43 grade	Portland Pozzolana cement or OPC- 43 grade
7	Minimum Cement Content	220Kg/cum and as specified in the item.	240Kg/cum and as specified in the item.
8	Fine Aggregate	Coarse sand as per CPWD specifications.	Coarse sand as per CPWD specifications.

Sl. No.	Grade of Concrete	M10	M15
9	Mix applicable	Plain/Reinforced cement concrete	Plain/Reinforced cement concrete
10	Method application	Pumping	Pumping
11	Max Cement content	500 kg/Cum	500 kg/Cum
12	(A) Characteristic compressive strength compliance requirement. (Mean of group of 4 non-overlapping tests and consecutive test) (N/Sq.mm)	Greater than or equivalent to fck+0.825xEstablished standard deviation Or Fck+3whichever is more	Greater than or equivalent to fck+0.825xEstablished standard deviation Or Fck+3whichever is more
	(B) Individual test (N/Sq.mm)	Fck-3	Fck-3

Sl. No.12 above is added for the purpose of operation of Clause 16 of IS 456 - 2000.

(1) Approved admixtures conforming to IS-9103 shall be permitted to be used. The chloride content in the admixture shall satisfy the requirement of BIS 5075. The total amount of chloride content in the admixture mixed concrete shall satisfy the requirement of IS 456-2000.

(2) The concrete mix design with and without admixture will be carried out by the contractor through the laboratory to be approved by the Engineer-in- Charge.

(3) The various ingredients for mix design/ laboratory tests shall be sent to the lab/test houses through the Engineer-in-Charge and the samples of such ingredients sent shall be preserved at site till completion of work or change in Design Mix whichever is earlier. The sample shall be taken from the approved materials, which are proposed to be used in the work.

(4) The contractor shall submit the mix design report from approved laboratories such as any Government Engineering College /Institute for approval of Engineer-in-charge within 30 days from the date of issue of letter of acceptance of the tender. No concreting shall be done until the mix design is approved.

(5) The contractor shall make cubes of trial mixes as per approved mix design at site laboratory for all grades of concrete in presence of the Engineer-in-charge using same ingredients as adopted for design mix, prior to commencement of concreting and get them tested in presence of Engineer- in – Charge for 7 days and 28 days. For each design mix, a set of six cubes shall be prepared from each of the three consecutive batches. Three cubes from each set shall be tested at the age of 7 days and three cubes at the age of 28 days. The cubes shall be made, cured, transported and tested strictly in accordance with CPWD specification. The average strength of nine cubes at the age of 28 days shall exceed the specified target mean strength for which design mix has been approved.

(6) Tests shall be done at the laboratory as approved by the Engineer-in-charge.

(7) For each change of source or quality / characteristic properties of the ingredients during the work, from that approved & used in the concrete mix a fresh mix design shall be got done by the contractor. Revised trial mix test shall be conducted and shall be submitted by the contractor as per the direction of the Engineer-in-charge.

(8) The cost of packaging, scaling, transportation, loading, unloading cost of samples and the testing charges for mix design in all cases shall be borne by the contractor.

(9)The mix design shall be done considering the degree of quality control as 'good' in all cases.

(10) The Item of design mix cement concrete shall be inclusive of all the ingredients including admixtures it required labour, machinery, T&P etc. (Expect shuttering which will be measured & paid for separately) required for a design mix concrete of required strength and workability. The rate quoted by the agency for the mix design items shall be net & nothing extra shall be payable on account of change in quantities of concrete ingredients like cement, sand, aggregates and admixtures etc. as per the approved mix design until unless specified elsewhere in the Notice Inviting Tender Documents.

(11) No fly ash shall be allowed to be added in the Design Mix at site

3.14. COVER BLOCKS: Contractor shall use factory made cover blocks of approved shape and strength for all RCC works to avoid displacement of bars in any direction and to ensure proper cover. Alternatively, the contractor may manufacture the cover blocks as per approved methodology by Engineer-In-charge. The grade of concrete shall be same grade as of concrete in which they will be used. The concrete shall be fiber reinforced concrete with 6mm downgraded aggregate. Shape & size shall be as decided by Engineer-In-charge.

3.15. CURING:

i) The contractor shall ensure moist curing to all structural members in general. Curing shall be done with 2 or 3 layers of wet hessian cloth covered by PVC sheets in order not to allow the moisture to evaporate.

ii) Since the design mix is having controlled water content, the contractor shall protect the concrete from drying shrinkage by resorting to early age curing. Covering of wet hessian cloth shall be done after the onset of the final setting time.

iii) The contractor shall submit methodology of proposed curing which ensures continuous maintenance of required temperature regime.

iv) Membrane curing by chemical compounds may be allowed at places which are normally inaccessible and repair works and nothing extra is payable on this

account. If curing compounds are proposed for any particular use, the contractor shall obtain permission for use of any particular brand of compounds from Engineer-In-Charge.

3.16 RATES: -

(i) The rate includes the cost of materials, labour and T&P, including mixing, placing, pumping of concrete and transportation involved in all the operations described above except for the cost of centering, shuttering & reinforcement which will be paid for separately.

(ii) In case of rejection of concrete on account of unacceptable compressive strength, governed by para "Standard of Acceptance" as above, the work for which samples have failed shall be redone at the cost of contractor. However, the Engineer-in-charge may order for additional tests (like cutting cores, ultrasonic pulse velocity test, load test on structure or part of structure, etc.) to be carried out at the cost of contractor to ascertain if the portion of structure wherein concrete represented by the sample has been used, can be retained on the basis of results of individual or combination of these tests. The Contractor shall take remedial measures necessary to retain the structure as approved by the Engineer-in-charge without any extra cost. However, for payment, the basis of rate payable to contractor shall be governed by the 28 days cube test results and reduced rates shall be regulated in accordance with CPWD Specifications.

3.17. RCC WORK (ORDINARY)

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

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

3.18 FORM WORK

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

3.18.2 Only M.S. centering / shuttering and scaffolding material unless & otherwise specified shall be used for all R.C.C. work to give an even finish of concrete surface. However, marine-ply shuttering in exceptional cases as per site requirement may be used on specific request from contractor to be approved by the **Engineer-in-Charge**.

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

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

3.18.5 In order to keep the floor finish as per architectural drawings and to provide required thickness of the flooring as per specifications, the level of top surface of R.C.C. shall be accordingly adjusted at the time of its centering, shuttering and casting for which

nothing extra shall be paid to the Contractor except the places where different type of flooring is provided in the same room.

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

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

Dented, broken, cracked, twisted or rusted shuttering plates shall not be allowed to be used on the work.

The shuttering plates shall be cleaned properly with electrically driven sanders to remove any cement slurry or cement mortar or rust. Proper shuttering oil or de-bonding compound such as "Reebol" of FOSROC or equivalent shall be applied on the surface of the shuttering plates in the requisite quantity before assembly of steel reinforcement. Nothing extra shall be paid on this account.

3.18.7 Concreting of upper floor shall not be done until concrete of lower floor has set at least for 14 days but form work and reinforcement can be taken up after the concrete has set at least for three days.

3.18.8 Double steel scaffolding having two sets of vertical supports shall be provided for external wall finish, cladding etc. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding platform shall be fixed. Scaffolding shall have steel staircase for inspection of works at upper levels. Nothing extra shall be paid on this account.

3.19. REINFORCEMENT: -

3.19.1. The reinforcement shall be done as per CPWD Specifications.

3.19.2. The rate of item of reinforcement of RCC work includes all operations including straightening, cutting, bending, welding, binding with annealed steel or welding and placing in position at all the floors with all leads and lift complete as per CPWD Specifications.

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

RCC items is inclusive of cost of such cover blocks & Cover Guard Bars. Nothing extra shall be paid on this account.

4.0 MASONRY WORK: -

4.1.1 The PCC block work shall be carried out with good quality Fly ash cement blocks of class designation 7 (strength not less than 70kg/sq.cm)as per CPWD Specifications.

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

4.1.3 Brick work provided around shaft or lift walls or around slab cutouts shall be measured in the brick for corresponding floor level. Nothing extra shall be paid on this account.

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

5.0 EXPANSION JOINT

5.1 General

5.1.1 Seismic / separation/ expansion joints shall be provided where shown in the drawings and as per CPWD specifications and as directed by Engineer-in-Charge. They shall be constructed with in gap between the adjoining parts of the works of the width specified.

5.1.2 The contractor shall ensure that no debris is allowed to enter and be lodged in seismic/ separation/ expansion joints.

5.1.3 The expansion joint shall be cleaned and made dry completely. All loose materials shall also be removed. The joints gap shall be made uniform in width and depth after cleaning the joints. The backup materials of best quality shall be provided in position in order to produce thoroughly together in required proportion as prescribed by manufacture specification, so that a uniform mixture obtained. The mixed solution shall be applied to two sides of the joint that it covers the sides complete. Disturbed edges of RCC members near expansion joints shall be finished with rich mortar without any extra work includes providing required width of expansion board in the joints and measurement of expansion board only shall be taken.

6.0 WOOD WORK

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

6.2 The sample of timber to be used shall be deposited by the contractor with Engineer-in-charge before commencement of work.

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

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

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

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

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

Area of Glazing	Thickness
(a) For glazing area up to 0.50 sqm	4.0 mm
(b) For glazing area more than 0.50 sqm to 0.90 sqm	6.0 mm

6.8 Factory made wooden flush door and paneled and wire gauge shutters shall be manufactured and carried out as per CPWD specifications (Volume-I, 2019 with upto date correction slips).

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

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

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

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

6.13 **(a)** Inspection of shutters shall be carried out for dimensions & tolerances, size & type general construction & workmanship, finish & glazing at the following frequency: -

Lot Size	Sample Size	Permissible number of defectiveness
Upto 25	2	0
26 to 50	5	0
51 to 100	8	0
101 to 150	13	1
151 to 300	20	2
301 to 500	32	3
501 to 1000	50	5
1001 & above	80	7

(b)Criteria for conformity: - Any sample shutter failing in any one or more of the requirements inspected for as above shall be considered as defective. A lot shall be considered as having satisfied the requirements of the standard if the number of defective shutters in the sample does not exceed the corresponding permissible number of defectiveness given above.

(c) Testing: - The shutters shall be tested for species seasoning & treatment, defects in the timber, panel material, construction & workmanship in the approved Laboratory at the frequency mentioned in CPWD specification.

If shutters are found defective in any one of the criterion double the shutter shall be tested & if found permissible can be accepted. If shutter is found defective in more than one criterion, the whole lot shall be rejected.

(d) Finish

i) All components of door shutter shall have smooth finish.

ii) Panels of the door shutters shall be flat and well sanded to a smooth and level Surface.

iii) All the surfaces of door shutters which are required to be painted or polished or varnished shall be got approved from the Engineer in Charge before applying protective coat of primer, polish or varnish.

7.0 Flush Doors

7.1 General

The door shall be of flush type solid core marine grade with single or double shutter as the case may be.

7.2 Shutters

Flush door shutters shall have a solid core and may be of the decorative or non-decorative (Paintable type as per IS 2202 (Part I). Nominal thickness of shutters may be 30mm as mentioned in the BOQ. Thickness and type of shutters shall be as specified.

Width and height of the shutters shall be as shown in the drawings or as indicated by the Engineer-in-Charge. All four edges of the shutters shall be square. The shutter shall be free from twist or warp in its plane. The moisture content in timbers used in the manufacture of flush door shutters shall be not more than 12 per cent when tested according to IS 1708.

7.3 Core

The core of the flush door shutters shall be a marine grade block board having wooden strips held in a frame constructed of stiles and rails. Each stile and rail shall be a single piece without any joint. The width of the stiles and rails including lipping, where provided shall not be less than 45mm and not more than 75mm. The width of each wooden strip shall not exceed 30mm. Stiles, rails and wooden strips forming the core of a shutter shall be of equal and uniform thickness. Wooden strips shall be parallel to the stiles.

7.4 End joints of the pieces of wooden strips of small lengths shall be staggered. In a shutter, stiles and rails shall be of one species of timber. Wooden strips shall also be of one species only but it may or may not be of the same species as that of the stiles and rails. Any species of timber may be used for core of flush door. However, any non-coniferous (Hard wood) timber shall be used for stiles, rails and lipping.

7.5 Face Panel

The face panel shall be formed by gluing, by the hot-press process on both faces of the core, either plywood or cross-bands and face veneers. The thickness of the cross bands as such or in the plywood shall be between 1.0mm and 3.0mm. The thickness of the face veneers as such or in the plywood shall be between 0.5mm and 1.5mm for commercial veneers and between 0.4mm and 1.0mm for decorative veneers, provided that the combined thickness of both is not less than 2.2mm. The direction of the veneers adjacent to the core shall be at right angles to the direction of the wooden strips. Finished faces shall be sanded to smooth even texture. Commercial face veneers shall conform to marine grade plywood and decorative face veneers shall conform to type I decorative plywood in IS 1328.

7.6 Lipping

Lipping, where specified, shall be provided internally on all edges of the shutters. Lipping shall be done with battens of first class hardwood or as specified of depth not less than 25mm. For double leaved shutters, depth of the lipping at meeting of stiles shall be not less than 35 mm. Joints shall not be permitted in the lipping.

7.7 Rebating

In the case of double leaves shutters the meeting of stiles shall be rebated by 8 mm to 10 mm. The rebating shall be either splayed or square type as shown in drawing

where lipping is provided. The depth of lipping at the meeting of stiles shall not be less than 30 mm.

7.8 Opening for Glazing

When required by the purchaser opening for glazing shall be provided and unless otherwise specified the opening for glazing shall be as per drawings. The bottom of the opening shall be at a height as shown in the drawings. Opening for glazing shall be lipped internally with wooden batten of width not less than 25 mm.

7.9 Tolerance

Tolerance on width and height shall be + 3 mm and tolerance on nominal thickness shall be ± 1.2 mm. The thickness of the door shutter shall be uniform throughout with a permissible variation of not more than 0.8 mm when measured at any two points.

Adhesive: - Adhesive used for bonding various components of flush door shutters namely, core, core frame, lipping, cross-bands, face veneers, plywood etc. and for bonding plywood shall conform to BWP type, phenol formaldehyde synthetic resin adhesive conforming to IS 848.

7.10 Tests, Fixing , Measurements

As per CPWD Specifications.

8.0. STEEL WORK

8.1 All steel work shall be carried out as per CPWD Specifications. (Volume 1) 2019 with up-to-date correction slips.

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

9.0 FLOORING

9.1 All work in general shall be carried out as per CPWD Specifications (Volume 1) 2019 with up-to-date correction slips.

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

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

9.4 Samples of flooring stones/ Tile (Kota/ Marble/ Granite/ Ceramic tiles/ Vitrified tiles etc.) shall be deposited well in advance with the Engineer-in-Charge for approval. The sizes of stones for flooring shall be of a size not less than 600mmx600mm or as approved by Engineer-in-Charge. Approved samples should be kept at site with the Engineer-in-Charge and the same shall not be removed except with the written

permission of Engineer-in-Charge. No payment whatsoever shall be made for these samples.

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

9.6 Full width Marble/ Kota/ Granite stone over kitchen platform shall be provided except to adjust for closing pieces. The marble / stone flooring in treads and risers of staircase is to be laid in single piece.

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

9.8 Chasing of required width and thickness shall be made in brick work at skirting location so as to flush the external surface of skirting with internal plastering. No extra payment towards making chases in brick work at skirting shall be made and the same is presumed to be inclusive of rate quoted for the item of providing and fixing skirting.

9.9 Proper gradient shall be given to flooring for toilets, verandah, kitchen, courtyard etc. so that the wash water flows towards the direction of floor trap. Any reverse slope if found, shall be made good by the contractor by ripping open the floor/grading concrete and nothing shall be paid for such rectifications.

9.10 The flooring and skirting will be executed as per pattern shown in the Architectural drawings and as per approval of Engineer-in-Charge and nothing extra shall be payable on this account.

9.11 The rate shall include the cost of all materials and labour involved in all the operations. Nothing extra shall be paid for use of cut/sawn stone/ tiles in the work.

9.12 The flooring laid with stone slab / tile / marble / Granite/ Ceramic tiles / vitrified tiles etc. shall be adequately protected by a layer of plaster of Paris, which shall be maintained throughout and removed just before handing over of the works for which nothing extra shall be payable.

10.0. VITRIFIED TILES FLOORING

10.1 The tiles shall be of approved make and shall generally conform to Table 12 of IS15622. The Vitrified tiles of specified sizes shall be used & sample of tiles shall be got approved from the Engineer – in – charge. The Mandatory tests for vitrified tiles shall be got done as per CPWD Specifications (volume – 1) / relevant BIS Code.

10.2 The vitrified shall be as specified in the item. The tiles shall be of specified colours as shown in the drawings or as approved by Engineer – in – Charge and will be laid in pattern as per architectural drawings. Nothing extra shall be paid for laying tiles in specific pattern. The tiles shall be first quality of approved make and to be procured from mother plant only.

10.3 The vitrified tile flooring / ceramic tile flooring or like tile flooring work shall be adequately protected by a layer of plaster of Paris, which shall be maintained

throughout and removed just before handing over of the works for which nothing extra shall be payable.

11.0 WATER PROOFING: -

11.1 The work shall be got executed as per CPWD or manufactures' specifications and from the specialized agency as approved by the Engineer in Charge.

11.2 Contractor shall also submit the names of water proofing specialist along with information about their technical capabilities and list of similar works executed by the specialized agency in the past for the approval of Engineer-in-charge within 30 days from the date of award of work.

11.3 Total quantity of the water proofing compound required shall be arranged only after obtaining the prior approval of the make by Engineer-in-charge in writing. Materials shall be kept under double lock and key and proper account of the water proofing compound used in the work shall be maintained. It shall be ensured that the consumption of the compound is as per specified requirements.

11.4 The finished surface after water proofing treatment shall have adequate smooth slope as per the direction of the Engineer-in-charge.

11.5 Before commencement of treatment on any surface, it shall be ensured that the outlet drain pipes / spouts have been fixed and the spout openings have been chased and rounded off properly for easy flow of water.

11.6 The entire execution of waterproofing work shall be video recorded and submitted to Engineer-in-Charge on a DVD disc. Various toilets shall be indexed and written with paint on the walls for reference and identification purpose.

11.7 GUARANTEE BOND FOR ALL WATER PROOFING ITEMS: -

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

12.0. FINISHING: -

12.1 The work shall be done in accordance with CPWD Specifications -2019 Vol. I to Vol. II with upto date correction slips and the manufacturer's specifications where CPWD specifications are not available.

12.2 The quantity of paint required as per the theoretical consumption including wastages, if any, shall be procured from the approved manufacturer or his authorized dealers and deposited with the representative of the Engineer-in-Charge at site.

12.3 The paint shall be obtained in smaller packing (around 20 liters).

12.4 The paint shall be kept in the joint custody of the Department and the Contractor and day-to-day account of receipt and issue shall be maintained. However, the safe custody and watch and ward shall remain to be the responsibility of the Contractor. Nothing extra shall be payable on this account.

12.5 The name of the manufacturer, manufacturer's product identification, manufacturer's mixing instructions, warnings and instructions for handling and application, toxicity and date of manufacturing and shelf life shall be clearly and legibly mentioned on the labels of each container. These details shall be kept in record. The material shall be consumed in the order of material brought to site, first come first consume basis. The Contractor shall obtain and submit to the Department the manufacturer's certificate for compliance of the various characteristics of the materials as per the manufacturer's specifications and also copy of the manufacturer's test report for the record.

12.6 Empty containers of the paints shall not be removed from site till the completion of the work unless otherwise permitted and shall be removed only with the permission of the Engineer-in-Charge or his authorized representative at site of work.

12.7 All arrangements for measuring, dosing etc. at site shall be made by the Contractor. Nothing extra shall be payable on this account.

12.8 The Contractor shall apply samples of each kind of paint for the approval of shade and colour as per the directions of the Engineer-in-Charge before procuring the paint in mass.

12.9 All incidental charges of cartage, storage, wastage, safe custody, scaffolding, cost of samples and mock ups etc. shall be borne by the Contractor and no claim, whatsoever, shall be entertained on this account.

13.0 SANITARY INSTALLATIONS /WATER SUPPLY / DRAINAGE: -

13.1 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.

13.2 The contractor shall furnish all labour, materials and equipment, transportation and incidental necessary for supply, installation, testing and commissioning of the complete Plumbing / Sanitary system as described in the Specifications and as shown on the drawings. This also includes any material, equipment, appliances and incidental work not specifically mentioned herein or noted on the

Drawings/Documents as being furnished or installed, but which are necessary and customary to be performed under this contract. The Plumbing / Sanitary System shall comprise of following:

a. Sanitary Fixtures and Fittings.

b. Internal and External Water Supply.

c. Internal and External Drainage.

d. Balancing, testing & commissioning.

e. Test reports and completion drawings.

13.3 For the work of water supply and sanitary installations, the contractor shall engage the approved licensed plumbers and submit the name of proposed plumbing agencies with their credentials for approval of the Engineer-in-Charge. For quality control & monitoring of workmanship, contractor shall assign at least one engineer who would be exclusively responsible for ensuring strict quality control, adherence to specifications and ensuring top class workmanship for the installation.

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

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

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

13.7 The contractor shall examine all architectural, structural, plumbing, electrical and other services drawings and check the as-built works before starting the work, report to 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 cost to the department.

13.8 All the shop drawings shall be prepared on computer through AutoCAD System based on Architectural Drawings and site measurements within two months of the stipulated date of start of the contract, contractor shall furnish, for the approval of Engineer In-Charge, the two sets of detailed shop drawings of complete work and materials including layouts for Plant room, Pump room, Typical toilets drawings showing exact location of supports, flanges, bends, tee connections, reducers, detailed piping drawings showing exact location and type of supports, valves, fittings etc.; external insulation details for pipe insulation etc.

13.9 These shop drawings shall contain all information required to complete the work. These Drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipment, also the details of all related items of work by other contractors. Each shop drawing shall

contain tabulation of all measurable items of equipment/materials/works and progressive cumulative totals from other related drawings to arrive at a variation-in-quantity statement at the completion of all shop drawings. Minimum 4 sets of drawings shall be submitted after final approval along with CD. When he makes any amendments in the above drawings, the contractor shall supply two fresh sets of drawings with the amendments duly incorporated along with check prints, for approval. The contractor shall submit further four sets of shop drawings to the Engineer In-Charge for the exclusive use by the Engineer In-Charge and all other agencies. No material or equipment may be delivered or installed at the job site until the contractor has in his possession, the approved shop drawing for the particular material/equipment / installation.

13.10 Shop drawings shall be submitted for approval four weeks in advance of planned delivery and installation of any material to allow the Engineer In-Charge ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to his failure to produce shop drawings at the right time, in accordance with the approved programme.

13.11 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.

13.12 Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of the responsibility or requirement to furnish material and perform work as required by the contract.

13.13 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 the tender document.

13.14 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 and shall be commissioned only after approval by the Engineer In-Charge. All tests shall be carried out in the presence of the representatives of the Engineer In-Charge and nothing extra shall be payable on this account.

13.15 The contractor shall submit completion plans for water supply, internal sanitary installations and building drainage work within 15 days of the date of completion. These drawings shall be submitted in the form of two sets of CD's and four portfolios (300 x 450 mm) each containing complete set of drawings on approved scale indicating the work as installed. These drawings shall clearly indicate complete

plant room layouts, piping layouts and sequencing of automatic controls, location of all concealed piping, valves, controls and other services. In case the contractor fails to submit the completion plans as aforesaid, security deposit shall not be released and these shall be got prepared at his risk and cost.

13.16 The CCI/CI/PVC pipe and GI pipe etc. wherever necessary shall be fixed to RCC columns, beams etc. with rawl plugs and nothing extra shall be paid for this.

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

13.18 The pig led to be used in joints of 150mm,100mm, 75mm, 50mm dia of sand cast iron, centrifugally cast (Spun) iron pipes shall be as per relevant CPWD Specifications. The contractor shall bear all incidental charges for cartage, storage and safe custody of materials and shall construct suitable godowns, yards at the site of work for storing materials so as to be safe against damage by sun, rain, fire or theft etc., at his own cost and also employ necessary watch and ward establishment for the purpose at his own cost.

13.19 All fixtures and fittings shall be provided with all such accessories as are required to complete the item in working condition whether specifically mentioned or not in the Schedule of Quantities, specifications, elsewhere in this tender document & drawings. The quoted rates shall be deemed to be all inclusive for a complete item fit for use including all materials, labour, T&P, specials, equipment, testing & commissioning etc. Accessories shall include proper fixing arrangement, brackets, nuts, bolts, screws and required connection pieces. Nothing extra whatsoever shall be payable on this account. Fixing screws shall be half round head chromium plated brass screws with C.P. washers where necessary or otherwise as provided in the item.

13.20 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. Nothing extra shall be payable on this account. Horizontal pipes running along ceiling shall be fixed on structural adjustable clamps of approved design. Horizontal pipes shall be laid to uniform slope and the clamps adjusted to the proper levels so that the pipes fully rest on them and are properly secured.

13.21 Contractor shall provide all nuts, bolts, welding material and paint the Clamps with one coat of red oxide and two or more coats of black enamel paint. Slotted angle/channel supports on walls shall be provided wherever shown on drawings. Angles/channels shall be of sizes shown on drawings or specified in schedule of quantities. Angles/channels shall be fixed to brick walls with bolts embedded in cement concrete blocks and to RCC walls with suitable anchor fasteners. The spacing of support bolts horizontally shall not exceed 1m.

13.22 Wherever M.S. clamps are required to be anchored directly to brick walls, concrete slabs, beams or columns, nothing extra shall be payable for clamping arrangement and making good with cement concrete 1:2:4 mix (1 cement: 2 coarse sand: 4 stone

aggregate 20 mm nominal size) or as directed by the Engineer-in-Charge. The ground colour shall be applied throughout the entire length of pipe. Colour bands shall be superimposed on the ground colour and shall be applied near valves, junctions, joints, service appliances, bulkheads, valves, etc. for clear identification of fluid being carried and to avoid confusion. The relative proportional widths of the first colour band to the subsequent bands shall be 4:1.The minimum width of the narrowest colour band shall be 25 mm.

13.23 Rates for all items quoted shall be inclusive of all work and items given in the above mentioned specifications and Schedule of Quantities and applicable for the work under floors, in shafts or at ceiling level at all heights and depths. All rates are inclusive of cutting holes and chases in RCC and masonry work and making good the same. All rates are inclusive of pre testing and on site testing of the installations, materials and commissioning.

13.24 Cleaning and Disinfection of Pipelines:-

On completion of hydraulic tests and before a pipe is disinfected, it shall be proved to be free from obstruction, debris and sediment by scouring or by any other process which the Engineer-in-charge may prescribe. Upon satisfactory completion of testing and cleaning, the pipelines shall be disinfected as ordered. Chlorine solution shall be applied at the charging point as the pipeline is being filled and dosing shall be continued until the pipeline is full and at least 50 parts of chlorine per million parts of water have been made available and distributed evenly. If ordinary bleaching powder is used, proportions will be 150 gms of bleaching powder to 1000 litres of water. If a proprietary brand is used, the proportion shall be as specified by the manufacturer. The treated water shall be left in pipeline for a period as directed but not exceeding 24 hours chlorine residual tests shall be taken at various points along the pipeline. The disinfection process shall be repeated until the sample of water taken from the pipe line are declared fit for human consumption by a recognized laboratory.

13.25 Opening, cut out in slabs, beams as required shall be left out by inserting PVC spouts of required size before casting of RCC members. Nothing extra shall be paid on this account. The entire responsibility for the quality of work will however rest with the building contractor only.

14.0 STAINLESS STEEL RAILINGS:

14.1 Providing, fabricating and fixing in position welded built-up section using stainless pipes and connecting plates, of Grade as per Schedule of Quantities and of required diameter & thickness as per the directions of the Engineer-in-Charge, at the junctions of doors, on walls, other locations as directed etc. including cutting, welding, grinding, bending to required profile and shape, hoisting, buffing and polishing, cutting chase/embedding in RCC / Masonry, fixing using stainless steel screws, nuts, bolts and washers or stainless steel fasteners as required to make it rigidly fixed & stable and making good the plaster/flooring etc. all complete, at all floors and all levels as directed by the Engineer-in-Charge.

14.2 Rate includes cost of all inputs of materials, labour, T&P, etc. involved in the work and all incidental charges to execute this item. However, for the purpose of payment only the actual weight of the stainless pipes and stainless steel plates provided and fixed shall be measured in kg.

14.3 Guarantee Bond: The Contractor shall submit Guarantee Bond as per Proforma given in the tender document. In addition 5% (five percent) of the cost of this item of work shall be retained as security deposit and the amount so withheld would be released after **five** years from the date of completion of the entire work under the agreement, if the performance of the work done is found satisfactory. If any defect is noticed during the guarantee period, it shall be rectified by the contractor along with any incidental repairs to structure, flooring, finishing, fixtures and any other related damaged work within fifteen days of receipt of intimation of such defects in the work. If the defects pointed out are not attended to within the specified period, the same shall be got done from another agency at the risk and cost of the contractor and the cost of attending such repairs shall be deducted from any dues payable to the contractors

15.0 Aluminium Work

15.1 The work shall be carried out as per specified CPWD Specifications in general and as per directions of Engineer – in – charge.

15.1.2 Guarantee Bond: The Contractor shall submit Guarantee Bond as per Proforma given in the tender document. In addition 5% (five percent) of the cost of this item of work shall be retained as security deposit and the amount so withheld would be released after **Five years** from the date of completion of the entire work under the agreement, if the performance of the work done is found satisfactory. If any defect is noticed during the guarantee period, it shall be rectified by the contractor along with any incidental repairs to structure, flooring, finishing, fixtures and any other related damaged work within fifteen days of receipt of intimation of such defects in the work. If the defects pointed out are not attended to within the specified period, the same shall be got done from another agency at the risk and cost of the contractor and the cost of attending such repairs shall be deducted from any dues payable to the contractors.

16.0 UPVC WINDOWS & VENTILATORS

All openable and fixed window system shall have minimum 3 hollow chambers from front to back. The sliding system frames shall have minimum 3 chambers from front to back. The Sliding system Sashes shall have minimum 2 chambers from front to back. The outer profile shall not be less than 56mm.

All sections of the frame and sash shall be reinforced in accordance with the system supplier’s recommendations us in galvanized mild steel in a single continuous length.

GENERAL REQUIRMENT	
Profile	
The profile is to be extruded from a compound that has been blended to ensure quality and consistency. The material shall be pristine white high impact modified window grade uPVC and shall be conform to BS EN 12608:2003 as below.	
Description	Required Value
Flexural modulus of Elasticity Resistance to impact by falling mass at–10°C for Class II (falling mass 1000g; falling height 1500 mm – as per BSEN 12608:2003).	Shall notbelessthan2200N/mm2 not more than 1 test specimen shall show rupture in wall.
Mean Breaking Stress for welded corners.	Shall not be less than 35N/mm2for compression bending testor25N/mm2 for tensile bending test.

The profile shall be a hollow 3-chamber (across depth) profile with an outer wall thickness not less than 2. 2mm.The profile shall be of first grade/quality uniform and free from foreign bodies, cracks or marks.

Fabrication of Window: -

i) The window units shall be designed with all corner joints; transom joints and mullion joints being mitred and fusion welded.

ii) All excess material is to be neatly trimmed and neatly feature grooved/raised nib finish at corners, transom joints and mullion joints.

iii. There will be no mechanical joining of the profile

iv. No polishing flush of any joints will be permitted

v) The window units shall be designed so that the route of drainage is prevented from passing through the reinforcement chamber.

vi) The finished product shall be free from all sharp edges, burrs and the like that may be hazardous to the user.

vii) The dimensional tolerances on the finished outer frame height and width shall be+3mm. Frame assemblies shall be such that they can be installed square within a maximum difference in the diagonals of 4mm. Minimum over lap of sash on frame shall be 8mm.

viii) In all window units, adequate drainage should be provided to permit the escape of water from platforms or horizontal members beneath each sealed unit. The drainage slots shall not penetrate into the reinforcement chambers. Rain water Stop to be provided wherever necessary to provide barrier to excess rain water.

Reinforcement

i) Reinforcement shall be made from GI tube of not less than 1.5mm thickness as per strength requirement unless otherwise approved by Engineer-in-Charge.

ii) Steel reinforcement shall conform to IS277:2003 or equivalent. Base material of steel shall conform to IS 513:2008–Drawing Grade.

iii) The reinforcement shall be installed in accordance with the recommended actions. The reinforcement shall conform to the wind load requirements of IS 875: Part 3. The reinforcement shall be in one continuous length and should be installed minimum 5mm and maximum 10mm from the face of the profile to be welded.

iv) The reinforcement shall be secured to the profile so that it does not move or rattle and it maintains the structural integrity of the frame and satisfactory thermal separation. Reinforcement is to be fixed at a maximum of 100mm from the ends and then at a maximum of 300mm centers.

Glazing and Weather Seals

GLAZING

i) Window shall be such that glazing or re-glazing on site is possible without the need to remove the outer frames from the structure of the building.

ii) All glazing is to be packed in accordance with the system supplier's recommendations to prevent any kind of damage during handling.

WEATHER SEALS

The weather seals shall be EPDM/Silicone seals. ASTM-D412 and ASTM-D2240 are standard specifying test methods for Tensile strength and Hardness of the gasket whereas the required value shall be specified

Ultimate tensile strength min >7.5/mm2

The weather seals are to be fitted in continuous lengths and grooves. The joints in the vent weather seal are to be positioned at the bottom and in the outer frames at the top.

Security and Safety

Fasteners shall be designed so that they cannot be released from the outside by the insertion of a thin blade.

No opening light shall be openable or removable from the outside, when it is fastened in the closed position, except by use of special tools or breaking part of the window.

QUALITY CONTROLA NDTESTING OF MATERIALS

Raw Material

The material from which the profiles are made shall consist substantially from white polyvinylchloride as per BSEN 12608:20003. Only those additives and pigments may be used that are needed for the manufacture of the compound and its subsequent conversion into sound, durable extrusions of good surface finish and mechanical strength, as assessed by the requirements of this specification.

Profile Properties

Appearance and Finish

The color of the profile shall be uniform and the color of all profiles in a system shall be uniform. The profile shall be free from foreign bodies, cracks or sink marks when viewed by normal corrected vision at 90o to the surface and at a distance of 1 meter in normal diffused north light.

Dimensions and Weights

The profiles shall be straight such that the longitudinal axis of the profile, as measured on the face surfaces, may deviate from the straight line by no more than 1 mm per meter.

The cross section of the profile shall conform in shape and dimensions and may deviate by no more than + 0.5mm; glazing channels and seal grooves may deviate by not more than + 0.3mm. The weight of the profile per meter shall not be more than 5% below the nominal value.

Window properties

U-Value: The total Uw–U value of complete window shall be 3.3W/m2K Resistance to wind load:

All loadbearing members shall be adequately reinforced so as to resist the wind load requirements of IS875: Part 3. Calculations shall be submitted for all window designs.

AIR Tightness:

The air in filtration for windows shall not exceed 1 liters/second m2 @ 75Pa for both positive and negative pressures (certified for use in air conditioned buildings)

Water Tightness:

The water penetration for windows shall be minimum 15minutes @ 150Pa asper AS 4420.5.

Installation of Frame

i. Before installation the Installation Team is to make sure that the opening has been prepared and any repair work has been carried out. Allow a 5mm gap between the frame and the opening. The new window shall be set in the prepared opening. Allow for suitable packing blocks.
ii. The window shall be fixed into the aperture, by drilling and fixing through the outer frame, to the existing structure using ‘Fischer’ fixings, F8 S type bolts.
iii. The fixings shall be no less than 150 mm from corners or transoms/mullions and at no more than 600mm centers.
iv. When the frame is securely fixed in position then fit glass and glazing beads. Allow for any necessary glazing blocks and glass lock devices.
v. Check windows for correct operation before proceeding with making good.
vi. No fixings are to penetrate the drainage channels.

vii. The windows shall be first treated with Polyurethane Foam (P U Foam) to enhance insulation against heat and Noise. The gap between masonry and the frame is to be filled with Neutral Cure Silicon (exposed to sun surface) and/or Acrylic Sealant (only for the internal surface). The windows shall be first treated with Polyurethane Foam (PU Foam) to enhance insulation against heat and Noise.

viii. The silicone joints should be covered with Architraves/trims as per direction of Engineer-in-charge.

Making Good

i) Making good to the external surface of the window rame and finish with a compatible approved low modular silicone sealant to BS5889. All trims and quadrants are to be approved by the Engineer-in-Charge prior to fixing.

ii) Allow for making good any disturbed plaster, brick work and decorations internally and externally including color wash to brick work.

iii) Clean off excess material and check fittings and gearing.

iv) Leave installation clean and in good working order.

GENERAL ITEMS

i) This specification is to be read in conjunction with any other relevant documents and drawings.

ii) Sizes are not to be scaled from any drawings or sketches but should be measured on site prior to manufacture.

Window Accessories

i) Window should be designed and reinforced such that it can with stand the wind load requirements by providing suitable strengthening accessories.

ii) The window shall meet the requirements of water tightness

Trims shall be used to cover the window to masonry joints

Window Hard ware

i) All slider door/windows are to be provided with multi point locking arrangement with/without key locking facility as per the requirement. The hardware shall be provided as per preferred list attached. The slider locking mechanism handles are of projected/flush type.

ii) Casement window friction stays are to be of G-U or Securistyle or equivalent make of appropriate size and weight bearing capacity, made of SS 304. The stack height of friction stay is to be 16+0.5 mm.

i) The casement windows are to be provided with multi point locking mechanism of shall be provided as per preferred list attached.

FORM –H

CONSENT LETTER FROM ELIGIBLE ASSOCIATE AGENCY OF MINOR COMPONENT OF WORK

Name of work: "Renovation of water supply, sanitary, drainage system, reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters, at Beach Road, Calicut."

I / We hereby give my consent to associate with M/s ……, for executing the minor component of work of ……..…… (Mention category).

1. I / We will execute the work as per specifications and conditions of the agreement and as per directions of the Engineer –in-Charge for the corresponding minor work till the completion of the work.

2. I / We will be responsible for necessary action to handover the installations and for rectification of defects and repair during the maintenance / warranty period.

3. Also, I / We will employ full time technically qualified Engineer / supervisor for the minor component of the work as required for the work. I / We will attend inspection of officers of the department as and when required.

Date:

Signature with date of Major component	Signature with date of Associate/ Minor –Component
Contractor	Contractor
Address	Address
Witness with address (From major component contractor side)	Witness with address (From minor component contractor side)

LIST OF FIELD TESTS

i) Particle size and shape.

ii) Slump test.

iii) Flakiness & Elongation Index tests.

iv) Compressive strength (concrete or bricks) test.

v) Rebound Hammer test.

vi) Bulking of sand.

vii) Silt content of sand.

viii) Any other tests as per CPWD specifications.

(TABLE-1)

Equipments for Testing of Materials & Concrete at Site Laboratory

All necessary equipment for conducting all necessary tests shall be provided at the site in the well-furnished site laboratory of minimum 25 sqm area by the contractor at his own cost. The contractor shall furnish the same as per requirement at site.

(TABLE – 2)

PLANT AND EQUIPMENT REQUIRED TO BE OWNED / TAKEN ON LEASE BY THE CONTRACTOR

The contractor shall furnish the same as per requirement at site. The plants and equipment to be brought to the site as per Works requirement and as instructed by Engineer-in-charge within 14 days of issue of such instruction, failing which, a penalty at Rs. 5,000/- per day delay in the mobilization of equipment will be levied on the agency. Such penalty levied will be recovered from the immediate next RA bill of the contractor. However, if the work is completed within the stipulated date of completion, then the amount recovered will be refunded without any interest payment.

(On non-judicial stamp paper of minimum Rs.100)

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER-PROOFING WORKS (All Water - Proofing Items).

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 building and structures in the said contract recited completely water and leak-proof.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the effect that the said structures will remain water/leak proof for **(10) Ten years** to be reckoned from the date after the expiry of maintenance period prescribed in the Contract.

NOW THE GUARANTOR hereby guarantees that work executed by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be **(10) Ten years** to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

The decision of the Engineer-in-charge with regard to nature and cause of defect shall be final and binding on Guarantor.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect being found render the building water proof to the satisfaction of the Engineer-In-Charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the Guarantor's cost and risk. The decision of the Engineer-in-charge as to the cost payable by the Guarantor shall be final and binding.

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

IN WITNESS WHEREOF these presents have been executed by the obligator .....and ..... by ..... for and on behalf of the 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. .....

(On non-judicial stamp paper of minimum Rs.100)

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

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

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

AND WHEREAS THE GUARANT OR agreed to give a guarantee to the effect that the said work will remain structurally stable and guaranteed against faulty material and workmanship, defective anodizing/ powder coating for **Five years** to be reckoned from the date after the expiry of maintenance period prescribed in the Contract.

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

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

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

IN WITNESS WHEREOF these presents have been executed by the obligator .....and ..... by ..... for and on behalf of the 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 ON BEHALF OF THE PRESIDENT OF INDIA BY..... in the presence of:-

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

List of Preferred brand / Manufacturer/ Make (Civil component)

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 available in the market or in other unavoidable circumstances and subject to Approval of the alternate Brand by the Engineer-In-charge. However, in case, the equivalent model so approved, is cheaper than the model already mentioned in item/approved makes list, the price adjustment will be made based on the difference in market rate. In case, the rate of subsequently approved model is more, no extra payment will be made on this account.

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 CPWD 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 **Superintending Engineer, CPWD, Calicut** reserves the right to add or delete any materials and brands in the list of approved makes. However, in case, the equivalent model so approved, is cheaper than the model already mentioned in item/approved makes list, the price adjustment will be made based on the difference in market rate. In case, the rate of subsequently approved model is more, no extra payment will be made on this account.

Sl. No.	Materials	APPROVED MAKES
1	WHITE CEMENT	J.K. WHITE, BIRLA WHITE, ASIAN
2	CHEMICAL ADMIXTURES	ARDEX ENDURA, FOSROC, MC BAUCHEMIE, SIKA, BASF, PIDILITE, CHOKSEY CHEMICALS, BOSTIK
3	EXPANSION JOINT BOARD	SUPREME INDUSTRIES, SIL FILL OR EQUIVALENT, STP LTD
4	DAMP PROOF MATERIAL	ARDEX ENDURA, IMPERMO, DURASEAL, ACCO-PROOF
5	NON METALIC SURFACE HARDNER	ARDEX ENDURA, FOSROC, SIKA, PIDLITE,
6	INJECTION GROUTING	ARDEX ENDURA, FOSROC, SIKA, BASF, CICCO
7	RMC / DMC	ULTRATECH, LAFARGE, ACC, RMC

8	BITUMEN	INDIAN OIL, HINDUSTAN PETROLEUM, MANGALORE REFINERIES, BHARAT PETROLIUM
9	STEELWORK / TMT BARS	ISI MARKED TMT BARS OF TATA, JSPL, JSW, RINL, VSP OR THEIR AUTHORIZED DEALERS:
10	STRUCTURAL STEEL	ISI MARKED TMT BARS OF TATA, JSPL, JSW, RINL OR THEIR
11	AAC BLOCKS	XTRALITE FROM ULTRATECH, AEROCON FROM HIL, SIPOREX INDIA
12	EPOXY MORTAR	ARDEX ENDURA, FOSROC, SIKA, BASF, ULTRATECH, BOSTIK, PIDILITE
13	CC BLOCKS/ FLYASH BLOCKS	SIPOREX, SUNVIK, HIL
14	FRP DOOR FRAME& SHUTTERS	MEENA, RAWJI, FIBERTECH, ASTRALWIN DOORS, SMP MAGMA,
15	PVC DOOR SHUTTER AND DRAME	RAJSHRI, SINTEX , DUROPLAST
16	WOODEN FLUSH DOORS	KITPLY, CENTURY, GREENPLY, ARCHID PLY,KUTTY
17	WATER PROOF PLY / COMMERCIAL PLY	DURO, KITPLY, CENTURY, ARCHID PLY, GREENPLY
18	LAMINATES	FORMICA/DECOLAM/CENTURY/ROYAL TOUCH/GREENLAM
19	HP LAMINATES	MERINO/GREENLAM/DECOLAM/ CENTURY/ ROYAL TOUCH
20	PRE.LAMINATED PARTICLE BOARD	NOVOPAN, KITLAM, ARCHID PLY, CENTURY
21	NATURAL WOOD VENEER	ARCHID/ANCHOR/DURAIN/ KITPLY/ NATIONAL/ ACTION TESA
22	POLYSTER POWDER COATED SHADES	NEROLAC, BERGER, AKZONOBEL, ASIAN
23	GYPSUM BOARD	SAINT GOBAIN, LAFARGE, BORAL BOARD, ARMSTRONG
24	FALSE CEILING CALCIUM SILICATE	ARMSTRONG, AEROLITE, RAMCO
25	FALSE CEILING MINERAL FIBRE	SAINT GOBAIN, ARMSTRONG, ANUTONE
26	MELAMINE POLISH	ASIAN PAINTS, MALAMYNE GOLD, WUDFIN OF PIDILITE INDUSTRIES, TIMBER TONE OF ICI DULUX
27	DOOR HARDWARE	DORMA/HAFELE/KICH/OZONE/DORSET/ BACKERS FS/GODREJ
28	HYDRAULIC DOOR CLOSERS / FLOOR SPRINGS	DORMA, KICH, GODREJ, HARDWYN, DORSET

29	LOCKS / LATCHES	GODREJ, HARRISON, LINK, DORSET, DORMA
30	FIRE CHECK DOOR	BANGALORE PROTECH, SHAKTI, NAVAIR, KENWOOD, VEROTECH,
31	SMOKE SEAL STRIP	IMPROTED PROMAT / ASTRO FLAME
32	FIRE RATED HARDWARE	DORMA, INGERSOL RAND, GEZE, DORSET BACKERS FS
33	SS SCREWS FOR FABRICATION AND FIXING OF WINDOWS.	KUNDAN, PUJA, ATUL, GRIPWELL, NAKODA
34	BUTT / BALL BEARING HINGES	HAFFLE, DORMA, DORSET, GODREJ
35	PIANO HINGES	JOLLY, GARG, AMIT, JYOTI
36	NUTS BOLTS/ SCREWS	KUNDAN, PUJA, ATUL, IT, BOLT MASTER, GRIPWELL, NAKODA
37	ACOUSTIC INSULATION	U.P. TWIGA LTD, LLOYD INSULATION, SAINT GOBAIN,
38	GLASS/ REFLECTIVE GLASS	SAINT GOBAIN , ASAHI , PILKINGTON, MODI FLOAT, GLAVERBEL
39	UPVC WINDOWS / VENTILATION	FENESTA, REHAU, ENCRAFT, DUROPLAST WINTECH, NCL, MADHU INDUSTRIES, LG, YASHPOLY,
40	SOURCEFOR TEMPERING REFL. GLASS/ CLEAR	FUSO, SAINT GOBAIN, GURIND, IMPACT SAFETY
41	FIRE RATED GLASS	PYOSWISS OF SAINT GOBAIN, PYRAN OF SCHOTT, PILKINGTON
42	DOUBLY CHARGED VITRIFIED TILES BEING MANUFACTURED IN THE MOTHER PLANT.	KAJARIA, JOHNSON, RAK CERAMICS, NITCO
43	GLAZEDCERAMIC TILES	JOHNSON, KAJARIA, NITCO
44	FALSE FLOOR	HEWETSON, UNIFLOOR, UNITILE, KEBAO, PINNACLE
45	ENGINEERED WOOD /LAMINATE FLOORING	ARMSTRONG, WERNEL, PERGO, ACTION TESA, WELSPUN
46	CC PARKING TILES	NITCO, NTC, HINDUSTAN, PODDAR EUROCON, DAZZLE ULTRA.
47	INTERLOCKING CONCRETE BLOCKS	NITCO-(ROCKARD), BHARAT-(NILSAN), REGENCY, BESANT BEATONS
48	CLAY TILES ON ROOF	KENJAI, JOHNSON, COMMON WEALTH TRUST (IND) LTD

49	TILE ADHESIVE	ARDEX ENDURA, CICO, PIDILITE, PERROUS, FOSROC, SIKA, Ultra BOND
50	CHEQUERED TILES	NITCO, BHARAT, PODDAR
51	SYNTHETIC CARPET TILES	TOLI,HOLLITEX,STANDARDCARPETS , WELSPUN
52	GLASS MOSAIC TILES	ITALIA,PALLADIO,BISAZZA
53	PAINT/PRIMER/OBD/ACRYLIC PAINT/ ENAMEL/ ACRYLIC TEXTURED PLASTER / ACRYLIC EXTERIOR PAINT	ASIANPAINTS, ICIDULUX, NEROLAC, BERGER
54	WATER PROOF CEMENT PAINT	SNOWCEM INDIA LTD, ASIAN PAINTS, ICI DULUX, NIPPON PAINTS
55	FIRE RETARDANT PAINT	JOTUN, HILTI, AKZONOBEL, NIPPON
56	MIRRORGLASS	MODIGUARD, SAINT GOBAIN, ASAHI, ATUL
57	ANTI CORROSIVE BITUMASTIC PAINT	ASIAN / BERGER / SHALIMAR
58	EPOXYPAINT	BERGER PAINTS, ASIAN PAINTS, MRF, ARDEX ENDURA
59	EPOXYCOATING	ARDEX ENDURA, BASF,FORSOC,LATICRETE, MRF
60	STRUCTURAL SILICON/ WEATHER SILICON	DOW CORNING / WACKER / GE
61	ANODIZED ALU. FITTINGS FOR DOORS / WINDOWS	HARDIMA, EVERITE, SIGMA (ISI MARKED) JYOTHI
62	STAINLESS STEEL FITTINGS	DORSET, GODREJ, DORMA, OZONE, KITCH
63	ALUMINIUM SECTIONS	JINDAL, HINDALCO, INDALCO
64	FRICTION STAY HINGES	EBCO, HAFELE, SEVAX
65	ALU. COMPOSITE PANEL (ACP)	ALUCOBOND, EUROBOND, DURABUILD
66	E.P.D.M. GASKETS	ANAND/ ROOP/ BOHRA/ HANU/ AMEE RUBBER
67	WATER PROOFING COMPOUND	SIKA, ACCOPROOF, IMPERMO, FOSROC PIDILITE, ARDEX ENDURA, BOSTIK, BERGER
68	MEMBRANE WATER PROOFING SYSTEM	BASF,TEXSA, WR GRACE, PIDILITE, HYDRO TECH LTD. ARDEX ENDURA, BOSTIK, FOSROCK

69	POLYMER BASED WATER PROOF COATINGS	ARDEX ENDURA, BASF, MC-BAUCHEMIE, SIKA, FORSOLOC, PIDILITE, BERGER
70	WATER STOPS	ARDEX ENDURA, HYDROTITE, BASF, HYDROSWELL, PIDILITE, BOSTIK
71	PVC PERFORATED PIPES	REX POLY EXTRUSION LTD, AKASH ENTERPRISES, ZENPLAS PIPES PVT.LTD
72	MS PIPES	TATA, JINDAL, APOLLO
73	POLYSULPHIDE SEALANT	PIDILITE/CHEMETALL-RAJ/ FOSROC/ CHOKSEY CHEMICALS/ TUFF SEAL
74	BITUMEN IMPREGNATED BOARD	SHALITEX OR EQUIVALENT
75	POLYETHYLENE BACKER ROD	SUPREME IND.LTD. OR EQUIVALENT
76	FALSE CEILING MEMBERS (PERIMETER, CEILING SECTION, INTERMEDIATES, ANGLES ETC.)	ARMSTRONG, GYP. ROCK (SAINT GOBAIN)
77	WELDING ROD	ADVANI, ESAB
78	METAL DECK SHEET	TATA,JINDAL, ALFA, KAILASH
79	SHEAR STUD / CONNECTOR	KOCOOREQUIVALENT
80	CLAMP. REBAR, CHEMICAL FASTENER	HILTI,FISCHER,WURTH, AXEL
81	ANCHOR FASTENERS / BOLTS	HILTI, FISHER, CANON, BOSCH, AXEL
82	MASKING TAPES	3M, SUN CONTROL,WONDER POLYMER
83	DASH FASTENERS	HILTI, FISHER, CANON, BOSCH, AXEL
84	STAINLESS STEEL BOLTS, WASHERS AND NUTS	ATUL / HILTI / GRIPWELL / NAKODA
85	GRC JALI	TERRAFIRMA, ECOVISION, BIRLA WHITE GRC, EVEREST GRC
86	STAINLESSSTEEL	SALEM,JINDAL,SAIL
87	POLYCARBONATESHEET	DANPALON,ALCOX,POLYGAL, .A.CORPORATION, ALFA, GE, LEXON, TUFLITE
88	PTSTRANDS	DP WIRES, TATA, USHA MARTIN
89	ADHESIVE (MANUFACTURE SPECIFICATIONS)	ARDEX ENDURA, DUNLOP,VAM ORGANIC, SIKA, FOSROC, PIDLITE, BOSTIK
90	GROUTS	KERAKOLL,WEBER, ARDEX ENDURA, BOSTIK, FOSROCK, PIDILITE

91	SOLAR STUDS/ MEDIAN MARKERS	3M, AVERY DENNISION , NIKKALITE
92	POLYCARBONATE CONVEX MIRRORS, RUBBERISED ROAD HUMP	UNIQUESAFETYSOLUTIONS
93	AIRTRANSFERGRILLS	COOLGRILLSPUNE,SYSTEMAIRINDIA
94	THERMAL INSULATION TREATMENT	PIDILITE,BASF, BERGER, ARDEX ENDURA
95	VITREOUS WC / WASH BASIN	PARRYWARE, HINDWARE, CERA, JAQUAR
96	GULLY TRAPS	PERFECT, PARRY
97	STAINLESS STEEL SINKS	NILKANTH, AMC, COBRA, NIRALI, DIAMOND, HINDWARE
98	C. P. BRASS FITTINGS	JAQUAR, PARKO, MARC, HINDWARE, PARRYWARE, KINGSTON
99	GI PIPES	TATA, JINDAL, HISSAR
100	GI PIPE FITTINGS	ZOLOTO, UNIK, HB, ICS
101	RCCPIPES	INDIAN HUME PIPE, MOHAN HUME PIPE, BANGALORE CEMENT PIPES
102	SPUN CAST IRON COVERS &GRATINGS, PIPES, FITTINGS	NECO, SKF/ BENGAL IRON CORPORATION
103	SWR PVC PIPES AND FITTINGS	SUPREME, FINOLEX, PRINCE, ASTRAL
104	CPVC PIPE AND FITTINGS	SUPREME, ASHRIVAD, FINOLEX, PRINCE, FLOW GUARD, ASTRAL
105	UPVC PIPES	SUPREME, PRINCE, FINOLEX, AIZAR, APL APOLLO
106	WATER SUPPLY VALVES	ZOLOTO,LEADER,ARCO
107	CI MANHOLE COVER	NECO, BIC
108	SFRC COVERAND GRATING	TULSHI CONCRETE, KK, ADVENT, NEWTECH
109	AIR RELEASE VALVES, CI DOUBLE FLANGE SLUICE VALVE	KIRLOSKAR, RBM, KARTAR
110	PLASTIC ENCAPSULATED FOOTREST	KK INDIA, KGM, ACCURATE BUILDCON
111	GUNMETALVALVES	ZOLTO,LEADER,SANT,ANDCOINDIA
112	CI DOUBLE FLANGED SLUICE VALVES, NON RETURN VALVES	KIRLOSKAR,IVS,BURN, ZOLOTO,LEADER
113	SANDWICH PUPANELLED ROOFING SHEETS	LLOYD NSULATION(INDIA)LTD. ,JINDAL,MECTEC PVT LTD., TATA

114	GALVALIUM SHEET	LLOYD(INDIA)LTD. OXY ROOF, JSW, TATA BLUE SCOPE
115	CRYTALLINE WATER PROOFING ADMIXTURE AND COMPOUND	PENETRON, KRYTON, PIDILITE, FOSROC.
116	STAINLESS STEEL WATER SUPPLY PIPES	JINDAL, SWASTIK, RAMPPART, J-PRESS.
117	HERMETICALLY SEALED PERFORMANCE GLASS, TOUGHENED, DGU, SGU, TOUGHENED LAMINATED GLASS	AUTHORISED TOUGHENERS OF (MODI GUARD, SAINT GOBAIN, ASAHI, AIS/GLAVERBEL, PILKINGTON
118	ORDINARY PORTLAND CEMENT (43 GRADE) & PORTLAND POZZOLONA CEMENT	ACC, CEMENT, ULTRA TECH CEMENT , COROMANDAL BIRLA, CHETTINADU ,BHARATI ,DALMIA ZUARI, JAYPEE, MAHA CEMENT, J.K.CEMENT, AMBUJA, CENTURY , PENNA , RAMCO CEMENT, VIKRAM, MAHA CEMENT, INDIA CEMENT, SHREE CEMENT
119	PLASTICISER AND SUPER PASTICISER	AS PER CEMENT MANUFACTURER'S RECOMMONDATION
120	EXPANSION JOINT BITUMEN BOARD	DURA BOARD, HD100, DURAFILL
121	HIGH DENSITY PRELAMINATEDEBOARD	PERGO, GREEN PLY INDUSTRIES LTD.
122	SS BUTT HINGES	OZONE , DORMA, GEZE
123	MULTI WALLED POLYCARBONATE ROFING SHEETS	DANPALON, LEXAN GE, DPI DAYLIGHT.
124	PREMIER ACRYLIC SMOOTH EXTERIOR PAINT WITH SILICON ADDITIVES	ASIAN PAINT, ICI DULUX, NEROLOC BERGER
125	CEMENT BASED WALL PUTTY	JK WALL PUTTY, BIRLA WALLCARE, ASIAN PAINT
126	FLUSHING CISTERN	KOHLER, GROHE, JAQUAR
127	PE-AL-PE COMPOSITE PIPES	KITECH, VECTUS, JINDAL
128	PVC /HDPE WATER TANKS	VECTUS, SYNTEX, SUPREME
129	WATER SUPPLY FIXTURES	JAQUAR, HINDWARE
130	ANODISED ALUMINIUM FITTINGS FOR DOORS AND WINDOWS	DEFNE, SCHUECO, BHORUKA, KAWANEER, HARDIMA, EVERITE, JYOTHI, SIGMA
131	STRUCTURAL GLAZING	MODI, SAINTGOBAIN, ASAHI, GLAVERBEL

PART C

FOR E & M WORKS
(Minor Component)

PROFORMA OF SCHEDULES A to F
(E&M Components)

SCHEDULE 'A'

Schedule of Quantities	**:**	**Pages from 181 to 190**

E&M work Minor component: Rs. 16,23,448/-

SCHEDULE 'B'
Schedule of materials to be issued to the contractor

SCHEDULE 'D'
Extra schedule for specific requirements/documents for the work, if any

a. Particular specifications	:	**Pages from 126 to 135**
b. Special Conditions	:	**Pages from 136 to 137**
c. Additional Conditions	:	**Pages from 146 to 152**
d. Guarantee Bonds	:	**Pages from 108 to 109**

SCHEDULE 'E'

Reference to General Conditions of contract	**:**	**GCC 2023 for Maintenance Works as modified& corrected upto previous day of the last date of submission of the tender.**
Name of Work	**:**	"**Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work**
Estimated Cost Put to Tender	**:**	**Rs. 1,76,73,915/-** (**Civil – Rs. 1,60,50,467/- + E&M – Rs.16,23,448/-)**
Electrical work (Minor Component)	**:**	**Rs. 16,23,448/-**
(i) Earnest money	**:**	**Rs. 3,53,478/- (to be returned after receiving Performance Guarantee)**
(ii) Performance Guarantee	**:**	**(a) 5% of tendered value or Estimated cost put to tender (ECPT) (whichever is higher)** **(b) Where the tendered amount is less than eighty percent (80%) of the Estimated Cost Put to Tender (ECPT), the Performance**

		Guarantee, in addition to the requirement under (a) above, shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and the tendered amount
(ii) Security Deposits	**:**	**2.5% of tendered value**

SCHEDULE 'F' – General Rules & Directions

Officer inviting tender		**Executive Engineer(E), CPWD, Calicut**
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**
Definitions:		
2(vi)	Engineer-in-Charge	**Executive Engineer (E), CPWD, Calicut or Successor thereof.**
2(viii)	Accepting Authority	**Superintending Engineer, CPWD, Calicut or his successor thereof**
2(x)	Percentage on cost of materials and labour to cover all overheads and profits:	**15% (7.50% for profits + 7.50% for overheads)**
2(x)(a)	Standard schedule of Rates	**Delhi Schedule of Rates (E&M) 2025 for Electrical component as modified & corrected upto previous day of the last date of submission of the tender and Market Rates..**
2(xi) Department		**Central Public Works Department.**
9(ii) Standard CPWD Contract Form:		**GCC 2023 for Maintenance Works & CPWD - 7 as modified & corrected upto previous day of the last date of submission of the tender.**

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.	**7days**

ii)	Maximum allowable extension with late fee at 0.1% per day of performance Guarantee amount beyond the period as provided in (i) above	**3 days**

Clause 2	Authority for fixing compensation under Clause 2	**Superintending Engineer, CPWD, Calicut or his success or thereof.**
Clause 5	Number of days from the date of issue of letter of acceptance for reckoning date of start	**10 days**

MILE STONE(S) FOR ELECTRICAL COMPONENT AS PER TABLE GIVEN BELOW

Sl. No.	Description of Milestone (From date of start)	Time Allowed	Amount to be withheld in case of non-achievement of milestone
1	Approval of associate agencies for E&M works, make and model for materials to be used, panel drawings, getting approval from liasoning agencies for execution of works etc.	2 months	1 % of tendered amount
2	Execution of Metering panel, cable laying work and making foundations for poles and associated electrical work.	5 months	2 % of tendered amount
3	Testing, commissioning, and getting necessary approval from liasoning agencies for commissioning and handing over of all works.	7 months	2 % of tendered amount

Time allowed for execution of work:	:	**07 (Seven) Months**

Authority to decide:		
To convey the decision of Extension of time & Rescheduling of milestones	:	**Executive Engineer (E), CPWD, Calicut or his successor thereof**
Rescheduling of milestones & shifting of date of start for delay in site handing over	:	**Superintending Engineer, CPWD, Calicut or his successor thereof**

PROFORMA OF SCHEDULES Clause 5 - Schedule of handing over of site:

Part	Portion of site	Description	Time Period for handing over reckoned from date of issue of letter of intent.
Part A	Portion without any hindrance	**Entire Site**	**7 Days**

Part B	Portions with encumbrances		
Part C	Portions dependent on work of other agencies		

Clause 5.2

Documentation of Hindrances	**1.** The contractor has to first register himself through a registration form, available on CPWD website under 'Contractors Login' tab. After registration, User ID and password will be automatically generated and sent on his registered mobile and email ID. Using this User ID and Password he can access the module and view all the works which are being carried out by him in CPWD and he can register the hindrance against any particular work. After recording the hindrance by the contractor, it will be visible to all concerned officers (JE and above) of that work. An alert through text message and email will be sent to EE. **2.** Executive Engineer will first assign the work to the JEs/AEs who will give their comments on the hindrance within 2 days. After that Executive Engineer of the work will have to take appropriate action on the hindrance within 2 days. The comments of JEs/AEs will not be visible to contractor, only the decision of the Executive Engineer on the hindrance will be visible to contractor under "Decision of the Engineer-in-charge."

Clause 5.4 Recovery per day for delay in submission of revised programme	**Rs. 200/- per each day**

Clause 6

Computerized Measure Book (CMB) / Electronic Measurement Book (EMB) Mode of measurement:	**EMB** **(If any technical problem in EMB then Engineer-in-charge can allow 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	**Rs. 3 Lakhs**

Clause 7A

Whether clause 7A shall be applicable	**Yes**

Clause 7B

Whether clause 7B shall be applicable	**Yes**

Clause 8

Compensation for non-submission of completion plans:	**Rs. 25,000/-**
Authority to decide compensation for non-submission of completion plans:	**Superintending Engineer, CPWD, Calicut or his successor thereof**

Clause10A

List of testing equipment to be provided by the contractor at site lab	**As per site Requirement**

Clause10B (ii)

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

Clause10C	**Applicable**
Component of Labour Expresses as percent of Total value of work	**25 %**

Clause10CC	**Not Applicable**

Clause11

Specifications to be followed for the execution of work:	**CPWD Specifications 2019 Vol. - I & II as modified & corrected upto last date of submission of tender.**

Clause 12	The completion cost shall, in no case, exceed 1.5 times the contract amount. Contractor will devise a system to keep a watch on quantum of work vis-a-vis balance item to complete design scope of work and will give the alerts to Engineer-in-charge before taking up extra item(s), deviation(s)so that completion cost does not exceed above limit. Work executed beyond above limit will neither be recorded nor be paid. Engineer-in charge will verify and confirm the alerts before assigning deviations (s) and / or extra item(s) to the contractor. If additional work (s) is required to complete defined scope of work beyond above limit the Engineer-in-charge may take up such work (s) separately. The contractor will not have any claim (s) whatsoever on this account.

Clause 12.2 Deviation, Extra Item & pricing	
Clause 12.2	**As per GCC 2023 for Maintenance Works & CPWD -** 7 as modified & corrected upto **previous day of the last date of submission of the tender.**
Clause 12.3	All the deviated quantities shall be paid at agreement rates
Clause 12.5	Cost index: Latest available cost index at the time of beginning of execution of extra item(s) shall be used in sub clause for calculation rate (s) extra item(s).
Clause 12.6	Labour Rates: Labour Rates will be based on latest available circular issued by central govt. or state govt. whichever are higher applicable for the work.

Note: The rates so determined under clause 12 by the Engineer in Charge shall be final and binding on the contractor and shall not be arbitrable.

Clause16

Competent authority for deciding the reduced rates	**Superintending Engineer, CPWD, Calicut or his successor thereof**

Clause18

List of mandatory machinery, tools & plants to be deployed by the contractor at site:-	**As required for timely execution of work as per direction of Engineer in Charge**

Clause19

Clause 19 C	Rs. 500/- for each default	**Authority to decide penalty for each default -Engineer in charge**
Clause 19 D	Rs. 500/- for each default	
Clause 19 G	Rs. 500/- for each default	
Clause 19 K	Rs. 500/- per tradesman per day	

Clause 25

Conciliator for settlement of Disputes	**Additional Director General, Region Kochi, CPWD, or his successor thereof**
Arbitrator Appointing Authority:	**Superintending Engineer, CPWD, Calicut or his success or thereof**
Place of Arbitration	**Calicut or as decided by the Arbitrator in consultation with both the parties**

Clause32: *Requirement of Technical Representative(s) and recovery rate*

Sl. No.	**Requirement of Technical Staff**		**Minimum experience (Years)**	**Designation of technical staff**	**Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 32**
	Qualification	**Number (Of Major/ Minor Component)**			
1	Graduate Engineer Or Diploma Engineer	**1 + 1**	2 or 5 respectively	Project Manager Cum Planning / quality /site/ billing Engineer	Rs.15,000/- per month per person.

Assistant Engineers retired from government service who 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.

Clause38

(i)(a)	Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates ..... printed by C.P.W.D.	On the basis of Delhi Schedule of Rates 2023 printed by C.P.W.D.

(ii) Variations permissible on theoretical Quantities:

(a)	Cement	
	For works with estimated cost put to tender	2% plus/minus.

	more than Rs.25 lakh.	
(b)	Bitumen All Works	2.5% plus & only nil on minus side.
(c)	Steel Reinforcement and structural steel sections for each diameter, section and category	2%plus/minus
(d)	All other materials.	Nil

Executive Engineer (E)
Calicut, CPWD

SECTION – II

PARTICULAR SPECIFICATIONS AND SPECIAL CONDITIONS & ELIGIBILITY CRITERIA FOR E&M WORKS

1. **GENERAL**

    1. The tenderer should in his own interest visit the sites and familiarize himself with the site conditions before tendering.
    2. No T&P shall be issued by the department and nothing extra shall be paid on account of this.
    3. Care shall be taken, while handling / installing / maintaining the equipment/ carrying out the work, to avoid damage to the building/ premises. The Contractor shall arrange to repair all damages to the building caused by him so as to bring to the original condition. He shall also arrange to remove all unwanted waste materials from site, arising out of his work.
    4. The Contractor shall carry out the work in such a manner so as not to interfere or affect or disturb other works being executed by other agencies if any. No claim in the matter shall be entertained.

2. **RATES TAXES AND DUTIES:**

    1. The work shall be treated as on works contract basis and the rates tendered shall be for complete items of works inclusive of all taxes (including works contract tax), 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.
    2. Being an indivisible works contract, sales tax, octroi, excise duty etc. are not payable separately.
    3. GST for the work shall be included within the quoted rates for the various items.
    4. All statutory deductions like GST, Building and other Maintenance workers welfare cess etc at applicable rates will be made from the Contractors bill.

3. **COMPLIANCE WITH REGULATIONS**

    The work shall comply in all respects with this specification and:

    1. The Building Regulations applying to the project including requirements of the National Building Code 2016.Wiring rules and regulations including requirements of Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations 2023, National Electrical Code of India 2023, the local electricity supply authority and electrical inspectorate.
    2. Any other regulations that apply directly or indirectly to such installations in the location. Where conflict arise between this specification and any of the applicable acts, codes or standards the highest standard of materials and workmanship shall prevail. If the contractor proposes to supply finished goods procured directly or indirectly from vendors, from the countries sharing land border with India, such

vendor will be required to be registered with the competent authority under Government of India. Such procurement shall be accepted only on furnishing the details of such registration.

3. For materials to be used in work for which Government of India has notified minimum percentage of local content under, Public Procurement (Preference to Make in India) Order 2017 (Amended up to date), it shall be mandatory to supply materials meeting such stipulation.

4. Prior to commencement of work, all applicable statutory clearances required for taking up the work shall be obtained by the contractor. **This shall include NOC from KSEB, Initial scheme approval from Kerala Electrical Inspectorate, etc.**

5. After completion of the work, the completed installation shall be offered for inspection to inspectors of the relevant statutory authorities. **This shall include NOC from KSEB, Energisation approval from Kerala Electrical Inspectorate/ Central Electricity Authority, Consent to Operate Certificate from Kerala Pollution Control Board etc.** The contractor shall prepare and submit necessary drawings at his own cost, test certificates, other documents etc. for submission to these bodies. It shall be the responsibility of the contractor to liaison with/ coordinate with such inspecting authorities for obtaining the approval for the installation. The rectifications required by such statutory authorities shall be carried out by the contractor. Nothing extra shall be payable to the Contractor on this account. The installation shall be commissioned only after obtaining all applicable statutory clearances.

6. It shall be the responsibility of the contractor to liaison with/ coordinate with the electricity supplier for availing power supply and energizing the installation. Statutory fees if any for obtaining statutory clearances/ availing power supply shall be paid by the contractor and the same shall be reimbursed on production of evidentiary proof to the department.

ASSOCIATION OF OTHER AGENCY(S) FOR EXECUTION OF SPECIALIZED E&M WORKS BY THE BUILDING CATEGORY CONTRACTOR:

If the agency is not possessing a valid electrical license of appropriate class/ Voltas in his name, he shall associate with another agency possessing such license for the execution of all electrical works.

The building contractor shall associate with other agency(s) for execution of each of the work(s) listed hereunder, who fulfills the following eligibility criteria. In this effect Main contractor has to submit credentials in the form at attached -**Form: G, Form: H & Form: I** along with supporting documents.

Executive Engineer (E)
CPWD, Calicut

The Minimum Eligibility Criteria for Associated Agencies For E&M Components

Note: 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 last date of submission of tender. For other conditions, refer special conditions specified in Part C.

The applicant shall 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 as given in this tender document and submit the details as per attached - **Form: G, Form: H & Form: I** along with supporting documents in Part C of this tender document within 30 days of award of work OR before start of minor component of work whichever is earlier.

S.N.	COMPONENT OF E&M WORKS	ESTIMATED COST(Rs.)	ELIGIBILITY
I	ELECTRICAL INSTALLATIONS	**Rs.16,23,448/-**	If the main contractor does not possess valid Electrical license of appropriate class/voltage for executing the work then, he shall associate with eligible class registered contractor, possessing valid Electrical Contractor License of appropriate Class/Voltage issued by competent authority and fulfilling the following eligibility criteria of having successfully completed during last seven years ending up to previous day of last date of submission of tender as given below with completion certificate issued by an officer not below the rank of Executive Engineer or equivalent duly attested. Three similar works each of value not less than **Rs. 6.49 Lakhs** OR Two similar works each of value not less than **Rs. 9.74 Lakhs.** OR One similar work of value not less than **Rs. 12.99 Lakhs.** **Similar works means: "SITC of Internal/External Electrical Installations works"**

SECTION -1-TECHNICAL SPECIFICATIONS FOR E&M WORKS

A) WIRING SYSTEM

1. Recessed/ slab wiring shall be done using medium class PVC conduits (except for fire alarm wiring & data cabling for which specifications for open wiring may be followed).
2. Open wiring shall be done using GI conduits.
    1. Surface conduits shall be supported using spacer bar saddles.
    2. Suspended conduit runs shall be supported using GI strut channel support system. Final connections to equipments from rigid wiring shall be made using GI flexible conduits.
    3. All sections of metallic conduits shall be effectively bonded to the earthing system.
3. Perforated/ ladder/ wire mesh cable trays may be used for horizontal and vertical distribution of cables.
    1. Cable trays shall be hot dipped galvanized including all connection/ support accessories.
    2. All cable tray systems shall be complete with factory made bends, tees, reducers etc and other accessories like connectors, earth clamps, support channels & suspenders, stainless steel cable ties etc.
4. Wiring system shall be complete with all necessary clamps, glands, lugs, connectors, labeling ferrules etc. When different systems of wiring are combined in a single feeder/ circuit, the transition shall be made using suitable glands/ adapters. Nothing extra is payable on this account.
5. **All flexible copper wires used shall have Class 2 copper conductor satisfying the resistance requirements of NEC 2023 Part 1 Section 17, Annex B.**
6. **All flexible copper wires used shall be with FR-LSH PVC insulation or higher grade.**
7. Wherever light fittings/ fire detectors/ response indicators are proposed to be provided on the false ceiling, the respective wiring shall be brought upto the terminal of the light light fittings/ fire detectors/ response indicators. Flexible metal conduits properly glanded to junction boxes shall be used for drawing wires from junctions on ceiling to fittings on false ceiling and nothing extra shall be paid to the contractor for the same.
8. Power cables run under ground with protection shall be laid direct in ground with protection tiles as per IS 5820.
9. Entry of cables into the building shall be through suitable sleeves which shall be sealed after the drawing of cables using waterproof sealing compound/ foam. Nothing extra is payable on this account.

B) LABELLING

1. **GENERAL**

   Labelling scheme including sample labels for various equipments forming part of the installation shall be prepared by the contractor and submitted to the engineer-in-charge for his approval. Labelling activities may be taken up only on the approval of this plan by the engineer-in-charge.

2. **CABLES**
   1. All cables shall be labelled showing the fed from/ fed to locations, size of cable and number of runs.
   2. Stamped/ engraved aluminium labels may be used for labelling outdoor enclosures.
   3. Engraved acrylic sheets may be used for labelling indoor enclosures.
   4. Labels shall be connected to the cable/ conduit/ bunched wires using black nylon straps.
   5. Fed to labels shall be used near feeding end.
   6. Fed from label shall be used near fed end.
   7. Both labels shall be used at intermediate locations inside man holes, across openings in walls etc.
3. **PANELS**
   1. All panels shall be provided with labels on the front indicating the switch gear designation, feeding cable size & runs and destination.
   2. Engraved PVC labels may be used for switch gear designation.
   3. Painting may be used for remaining labelling.
4. **DISTRIBUTION BOARDS**
   1. All DBs shall be provided with labels indicating the fed to location of loads & circuit sizes, fed from location & feeder size.
   2. The DB labelling sheets must be computer printed in suitable size paper, laminated and pasted to the inside of the DB door using suitable industrial adhesive.
5. **SWITCH BOARDS**
   1. All switch boards shall be provided with 9mm acid proof labels indicating the DB and circuit designation.
   2. All circuits shall be provided with ferrules on both sides including all loops indicating the circuit, loop and DB designations.
6. **WARNING LABELS**
   1. Approved acid proof graphic labels shall be provided at the following locations.
      a. Near lightning down conductor locations indicating minimum distance of 3m to be maintained in the event of lightning.
      b. In front of panels and DBs warning to keep the area in front of the panel/ DB clear for 1m.
      c. In front of panel incomers warning of the presence of multiple sources of power for panels fed from multiple feeders.
      d. Near earthing points of enclosures and earth buses warning against disconnection of safety earth.

C) ELECTRICAL PANELS

1. GENERAL CONSTRUCTIONAL FEATURES

1. Panels shall be:
   a. Compartmentalized as per Form 4a construction.
   b. Dust and vermin proof Maintenance with minimum IP42 ingress protection for indoor panels and IP54 ingress protection for outdoor panels.
   c. Extendable on both sides.
2. Panel boards which are free floor standing should be erected on suitable M.S. channels across cable trench if the cable entry to the panel is from bottom and readymade cable trenches exist. Panels should be erected on a M.S. angle iron frame if readymade cable trenches do not exist and if the cable entry to the panel is from the bottom. All mountings in flooring / wall etc should be using anchor fasteners and G.I. hardware.
3. No equipment needing manual operation shall be located less than 250 mm above floor level. Operating levers, handles etc of highest unit shall not be higher than 1700mm.
4. Cable alleys shall be provided with suitable hinged doors. Adequate number of slotted cable support arms shall be provided for supporting the cables.
5. Metallic partitions shall be provided between adjacent cubicles, between feeder compartments, between busbar chambers and other compartments.
6. Panel shall be divided into suitable sections for convenience during shipment.
7. All doors shall be folded type. All covers and doors may be provided with neoprene gaskets and quarter turn metallic locks (triangular/ square).
8. Provision shall be made for shrouding the outgoing terminals for protection against accidental touch. All exposed live parts shall be totally covered by shrouds. If spreader bars are required, they shall be separated by phase barriers.
9. Wherever more than one cable has to be terminated on any incoming/ outgoing feeder the respective incoming/ outgoing terminals has to be designed in such way as to receive the required number of cables.
10. Bus bars and cable alleys shall be shrouded with FRP sheet for all connections to neighbouring bays.
11. Cable entry shall be provided on top and bottom as per site requirement. All gland plates shall be made out of 3mm thick galvanised iron sheet and bonded to the earth bar using flexible/ braided copper cable with cross section equal to the earth bus.

2. SHEET METAL WORK

1. The panel board shall be fabricated using suitable mild steel structural sections or pressed and shaped cold rolled sheet steel of thickness not less than 2 mm. Stiffeners shall be provided wherever necessary.
2. All panel edges and door edges shall be reinforced against distortion by rolling, bending or by the addition of welded reinforced members. Cut-outs shall be true

in shape and devoid of sharp edges. The complete structure shall be rigid, self-supporting and free from vibration, twists and bends.

3. **PAINTING**

   All sheet steel work shall be phosphated with applicable standards. All metal works shall be chemically treated with 7 tank process for degreasing, derusting, phosphating and applied with two coats of Epoxy powder coating.

4. **BUSBARS**
   1. Bus bars shall be of sufficient cross-section so that a current density of 130A/sq.cm is not exceeded at nominal current rating for aluminium bus bars, and 160A/sq.cm for copper bus bars.
   2. The panel shall be provided with three phase and neutral busbar. Busbar shall be of uniform cross section throughout the length of the bus bar section.
   3. All bus bar and bus-taps shall be insulated with color coded heat shrinkable PVC insulation sleeves.
   4. Busbar shall be adequately supported and braced to withstand the stresses due to the specified short circuit currents. Busbar supports shall be made of fibre reinforced moulded plastic material, or cast resin.
5. **CONTROL WIRING**
   1. The control wiring shall be carried out in single core 1.1 KV grade PVC insulated control cables with stranded copper conductors of minimum cross section 1.5 sq.mm (2.5 sq.mm for CT wiring).
   2. Runs of control wires within the switch-board shall be neatly bunched and suitably supported/ clamped. Ferrules shall be provided for easy identification of the control wires.
   3. Control wiring shall correspond to the circuits/ sequence of operations and interlocks agreed to with the Engineer-in-Charge.
   4. Not more than two connections shall be made at any one terminal
   5. The wiring shall be arranged and supported in such a manner that there will be no strain on termination.
6. **LABELLING**
   1. All panels shall be provided with labels on the front indicating the switch gear designation, feeding cable size & runs and destination.
   2. Engraved PVC labels may be used for switch gear designation.
   3. Painting may be used for remaining labeling.
7. **EARTHING/ BONDING**
   1. Panel shall be provided with a set of inter connected earth bus bar running along the entire length of the board at top (where cable entry is from the top) and bottom. At either end of the earth bus, one clamp type terminal with nuts, bolts and washers shall be provided for bolting the earthing conductor.
   2. The earth bus shall be of tinned copper and with minimum cross section equal to half the cross section of the phase bus bar (size may be reduced by 60% for panels with aluminium bus bars).

3. Earth bus bars shall be supported at suitable intervals. Positive connection between all the metal frames of equipment mounted in the switchboard and earth bus bar shall be provided.
4. All instrument cases shall be connected to the earth using 1100V grade, single core 2.5 sq.mm stranded, copper conductor cable.
5. All non-current carrying metal hinged doors shall be bonded to the panel using 1100V grade, single core 2.5 sq.mm stranded, copper conductor cable.
6. All shielded cables used inside panels shall be bonded at both ends to the metallic case/ DIN rails using suitable bonding clamps.

8. **TESTING**
    1. All panels shall be offered for inspection at the factory. All defects and deviations pointed out in the inspection report shall be rectified at the factory before dispatch to site. However, the Engineer-in-Charge may exercise discretion for waiving factory inspection in lieu of proper test certificates.
    2. Panel shall be subjected to following tests as per relevant standards:
        a. Mechanical Operational tests for all movable parts of switch gears, breakers, tripping devices etc.
        b. Testing of interlocks, control circuit operation including timing and sequencing.
        c. Insulation resistance test.
        d. Over voltage withstand test.

D) LED LUMINARIES

1. ANSI/IES LM79, ANSI/IES LM-80 & ANSI/IES TM-21 test reports, IES file and datasheets shall be submitted for all luminaries. Only test reports conducted in NABL accredited laboratories will be accepted.
2. All Luminaries supplied shall have serial numbers or batch code.
3. Luminaries shall be ISI marked as per IS 10322 and conform to IS 16101 to 16108 amended upto date.
4. LEDs shall be low power LEDs of the following makes only - Nitchia, Osram, Philips or manufactured by the OEM in the list of approved makes.
5. Luminaire efficacy of not less than the following
    1. Streetlights: 120 lumen/watt
    2. Panel light, Downlighter, Batten, Industrial fittings, Flood light: 100 lumen/watt.
    3. Other: 80 lumen/watt
6. Minimum Color rendering index (Ra) should be
    1. 70 for streetlights, flood lights, industrial lights and outdoor lights.
    2. 80 for all indoor lights.
7. Correlated Color Temperature (CCT) shall be 5700 K unless otherwise mentioned.
8. The L70B50 life of LED package as per TM-21 report shall be not less than 50,000 Hrs.

9. Light fittings used for outdoor and industrial use shall have minimum IP65 ingress protection, IK08 mechanical impact protection and 4 kV surge protection.
10. OEM accessories and supports shall be used for mounting and suspending luminaries.

SPECIAL CONDITIONS FOR ALL SPECIALIZED/E & M COMPONENTS

The applicant should either himself meet the eligibility conditions for the respective E&M components or otherwise he will have to associate with agencies, fulfilling the eligibility requirements and hence consent letter from at least One eligible Associate Agency of the respective components of E&M work shall also be submitted as per attached Performa as per attached -**Form: G, Form: H & Form: I** along with supporting documents of Part-C.

In case the main contractor is himself eligible (as per eligibility criteria) for executing any specific minor component and intends doing the job himself, he may not be required to associate with another agency for that minor component of work. In such cases the main contractor also has to submit the documents as per eligibility criteria mentioned for associated agency of individual E&M component.
However, the Composite category contractor shall also be eligible to carry out himself any or all of these works without associating any specialized agency provided:

(a) He fulfills the prescribed eligibility criteria respectively for these work(s)

Or

(b) He directly procures the equipment of approved make from manufacturer and gets it installed from authorized agency/service provider of the manufacturer/specialized agency, all as per the eligibility criteria mentioned in NIT.
The main tender has to submit the following documents for association of contractor within one month of award of work.
In support of the eligibility conditions of the proposed Associated Contractor, copy of their Electrical License, GST Documents duly attested by the applicants (Main Contractor) shall be submitted to the EE(C) who will submit these documents to the Executive Engineer (Electrical), CPWD, CALICUT, for deciding the eligibility. Each such Associated Contractor will certify that they are not debarred as on the day of application for sale of tender. Proposal for associating agency for minor components of work shall be submitted in Annexure-4A of Part-C of this tender document from each associate independently for all electrical and mechanical components.
The main contractor will submit an Affidavit of MOU signed with eligible associated contractor. The Affidavit of MOU enclosed as per Form - I in Part-C shall be signed by both the parties' main contractor i.e.as 1st party and associated contractor as 2nd party independently for all electrical and mechanical components.

In the event of the concerned E&M agency not performing satisfactorily or failure of associate contractor to complete the E&M work, the main contractor on written directions of the department, shall remove the associate contractor deployed on the work and shall submit name of new associate who fulfill the conditions mentioned in NIT to execute the left over work without any loss of time or variation in cost to the department. Such associates shall also give an undertaking along with the main tenderer but both of them together will stand guarantee for the equipments 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 contractor and paid partly by the Dept., 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 Associated Contractor will be allowed without prior approval of the Engineer-in-charge of the work.

In respect of all works i.e NAME OF WORK: Renovation of water supply, sanitary, drainage system, reconstruction of damaged compound wall and external painting, Electrical works etc. for the Central Excise & Customs Quarters, at Beach Road, Calicut - Balance Work. The materials shall be procured only from the original equipment manufacturers/authorized dealers of OEM. The contractor shall submit all documentary details in fulfillment of this conditions regarding procurement of materials including relevant test certificates.

Executive Engineer (E), CLTED, CALICUT shall be the Engineer-in-charge as far as E & M works are concerned.

Separate tender schedule abbreviated CPWD-7 and Special Conditions for E & M Work are appended with this tender. It will be obligatory on the part of the contractor/ tenderer to sign the tender documents for all the component parts.

The main contractor shall be responsible and liable for proper and complete execution of the E & M work and ensure coordination and completion of both civil and E & M work.

The main contractor has to enter into agreement with contractor associated by him for execution of minor component. Copy of such agreement shall be submitted to Executive Engineer (E) in charge of minor component as well as E.E. in charge of major component.

The associate contractor shall attend the inspection of the work by the Engineer-in-Charge of E&M works as and when required.

ANNEXURE – X

UNDERTAKING LETTER FROM MANUFACTURERS OF LED FITTINGS

We hereby agree that

a) All the LED fittings supplied by us are guaranteed for five years including drivers from the date of handing over.

b) In case of discontinuation of model and non-availability of spares, we will replace the fittings with equivalent/ high end model in case of manufacturing defect during the warranty period of 5 years.

For M/S ……..,

…….

(Authorized signatory of manufacturer of LED luminaries)

Counter Signature,

Major contractor

ANNEXURE-Y

UNDERTAKING LETTER FROM MANUFACTURERS OF OTHER EQUIPMENT

(ON THEIR LETTER HEAD)

We hereby agree that:

All the Equipment supplied by us is guaranteed for 1 year from the date of handing over.

In case of discontinuation of model and non-availability of spares, we will replace the equipment with equivalent/high end model in case of manufacturing defect during the warranty period of 1 year.

For M/S……...……

……. (Authorized signatory of manufacturer of Equipment)

Counter Signature,

Major contractor

FORM –G

PROPOSAL FOR ELIGIBLE ASSOCIATING AGENCIES FOR MINOR COMPONENTS OF WORK

I/we hereby propose the following agencies as per mentioned against each for executing corresponding minor components of work. Their consent letters are also attached.

Sl. No.	Name of Associated Contractor	Category and Class of registration	Enlistment copy/completion Certificates attached	Monetary Limit of work	Validity of registration	Consent letter attached (Yes/No)
IEI, Rising main, LT Panel and SC Cables						
UPS						
Wet riser and sprinkler system						
Fire alarm system & Voice alarm system						
LIFT						
Solar System						
Lan system						
CCTV system,						
Access control system						
EPABX system						
HVAC System						
IBMS System						

Note: Self Attested photocopies of enlistment order, valid electrical contractor license, work experience certificates of each agency for each component of E&M work shall be submitted.

Signature of contractor

FORM –H

CONSENT LETTER FROM ELIGIBLE ASSOCIATE AGENCY OF MINOR COMPONENT OF WORK

Name of work: Renovation of water supply, sanitary, drainage system, reconstruction of damaged compound wall and external painting, Electrical works etc. for the Central Excise & Customs Quarters, at Beach Road, Calicut - Balance Work.

I / We hereby give my consent to associate with M/s ……, for executing the minor component of work of ……..…… (Mention category).

1. I / We will execute the work as per specifications and conditions of the agreement and as per directions of the Engineer –in-Charge for the corresponding minor work till the completion of the work.

2. I / We will be responsible for necessary action to handover the installations and for rectification of defects and repair during the maintenance / warranty period.

3. Also I / We will employ full time technically qualified Engineer / supervisor for the minor component of the work as required for the work. I / We will attend inspection of officers of the department as and when required.

Date:

Signature with date of Major component Contractor
Address

Signature with date of Associate/ Minor Component Contract or
Address

Witness with address
(From major component contractor side)

Witness with address
(From minor component contractor side)

FORM-I

AFFIDAVIT OF MEMORANDUM OF UNDERSTANDING (MOU)
(to be submitted for each and every E&M component)

1. M/s. (Name of the firm with full address)
   Enlistment Status
   Valid Upto:
   (Henceforth called the main Contractor)

2. M/s. (Name of the firm with full address)
   Enlistment Status
   Valid Upto:
   (Hence forth called Associated Contractor)

For the execution of E & M Work

Name of Work: Renovation of water supply, sanitary, drainage system, reconstruction of damaged compound wall and external painting, Electrical works etc. for the Central Excise & Customs Quarters, at Beach Road, Calicut - Balance Work.

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. Both the parties can be paid consequent to the execution as per agreement to the extent this MOU permits. In case of any dispute, either of us will go for mediation by the Engineer In charge. Any of us may appeal against the mediation to the Superintending Engineer, CPWD, Calicut. His decision shall be final and binding on both of us.

We have agreed as under:

1. The Associated Contractor will execute all E & M works in the wholesome manner as per terms and conditions of the agreement.
2. The Associated Contractor shall be liable for disciplinary action if he fails to discharge the action(s) and other legal action as per agreement.
3. All the machinery and equipment's, tools and tackles required for execution of the E & M works, as per agreement, shall be the responsibility of the Associated Contractor.
4. The site staff required for the E & M work shall be arranged by the Associated 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 E & M 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.

SIGNATURE OF MAIN CONTRACTOR SIGNATURE OF ASSOCIATED

CONTRACTOR

Date: Date

Place: Place:

1. Witness with address 2. Witness with address

(From major component contractor side) (From minor component contractor side)

NOTE : Affidavit to be furnished on a 'Non-Judicial' stamp paper worth Rs.100/-

MEMORANDUM OF UNDERSTANDING (MOU) FOR ASSOCIATED CONTRACTOR

(To be submitted individually for each package of work for which main agency is not having the prescribed eligibility as per NIT)

(On Non Judicial Stamp Paper of Rs.100)

M/s. (Name of the firm with full address) …….
(Henceforth called the Main Contractor)

And

M/s. (Name of the firm with full address) …….
(Henceforth, called the Associated Contractor)

Name of work: **"Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work**

NIT No: 42/SE/EECLT/2026-2027

This Memorandum of Understanding (MOU) is made at ..... on ..... **Between** .....(herewith called the main contractor) having its registered office at ..... which expression shall unless repugnant to the subject or context include its administrators, successors and assigns.

and

..... (herewith called the Associated contractor) having its registered office at ..... which expression shall unless repugnant to the subject or context include its administrators, successors and assigns.

Whereas the main contractor has agreed to entrust the ..... (NAME OF THE PACKAGE) only to the associated contractor.

We state that MoU 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 this agreement for execution of the ..... (NAME OF THE PACKAGE) only in respect of above work. Both of us shall be responsible for the execution of ..... (NAME OF THE PACKAGE) as per the agreement to the extent this MoU allows. In case of any delay in the payment by the main contractor, the associated contractor can apply to the CPWD to release the payment under Clause 7B and deduct the same from the bills of the main contractor. In case of any dispute, either of us will go for mediation by the CE or SE (as the case may be) and his decision shall be final and binding on both of us.

We have further agreed as under:

1. The Associated Contactor will execute ..... (NAME OF THE PACKAGE) works as per terms and conditions of this agreement.
2. All the machinery and equipment, tools and tackles required for execution of the ..... (NAME OF THE PACKAGE) works, as per this MoU, shall be the responsibility of the Associated Contractor.
3. The site staff required for the execution of ..... (NAME OF THE PACKAGE) work shall be arranged by the Associated Contractor as per terms and conditions of this MoU.
4. All the correspondence regarding execution of the ..... (NAME OF THE PACKAGE) work shall be done by the department with the main contractor. In case of non-compliance of the provisions of agreement of the work by the associated contractor, the main contractor shall be held responsible and action will be taken against him as per agreement provisions.
5. In case of non-performance, associated contractor will be debarred from participation or association in the CPWD tenders by the CPWD.

(Authorized Signatory)

SIGNATURE OF THE MAIN CONTRACTOR

Date : .....

Place : .....

1. Witness with address

(From main contractor side)

(Authorized Signatory)

SIGNATURE OF ASSOCIATED CONTRACTOR

Date : .....

Place : .....

Witness with address

(From associated contractor side)

ADDITIONAL CONDITIONS OF CONTRACT AND SPECIFICATIONS FOR E & M WORKS

GENERAL AND COMMERCIAL CONDITIONS:

This section covers the various commercial conditions applicable and to be read in connection with the conditions of contract of the standard form (CPWD-7) of the department (CPWD) forming part of the tender papers. In the event of any discrepancy between these two, the requirements of the former will be followed.

These additional conditions and additional specifications are applicable to all E&M works in general. For specific tenders some of the E&M services may not be a part of the particular tender. In such cases the conditions and specifications which are not related to the works or components thereof mentioned in the schedule of work shall not apply for that particular tender.

All the E & M works shall be carried out as per direction and to the entire satisfaction of the Engineer-in-charge.

Unless otherwise specified in the following conditions, the work shall, in general, be carried out as per following specifications:

CPWD General Specifications for Electrical Works – Part-I (Internal), 2023 amended up to date.

CPWD General Specifications for Electrical Works – Part-II (External), 2023 amended up to date.

Relevant BIS specifications amended up to date.

Indian Electricity Act 2003 and Indian Electricity Rules 1956 amended up to date.

Local Fire Regulations applicable at the place of installation.

Relevant and applicable foreign standards and specifications amended up to date.

Any other relevant act or rules and local bye laws.

Commercial and additional conditions and specifications for E & M works for this tender.

If the specifications for any item or its component are not available in the CPWD specifications cited above, relevant BIS specification as amended up to date shall be followed, whether or not the specific reference of a particular BIS specification has been made in this specification / tender document.

Wherever any reference to any Indian Standard specification occurs in the document relating to this contract the same shall be inclusive of all amendments issued thereto or revisions thereof, if any, up to the date of opening of tenders.

All materials should conform to relevant BIS specifications wherever the same exists in absence of stipulation in this tender document.

Where manufacturers furnishes specific instructions / recommendations relating to the materials used in this job and/or their installation, covering points not specifically mentioned in these documents, these instructions shall be followed in all cases and shall be deemed to be included in the schedule of work whether they have been specifically mentioned or not.

Manufacturer’s catalogue / literature on installation, testing, maintenance and troubleshooting of major equipments shall be submitted to the department while handing over the installation.

MATERIALS TO BE USED IN THE WORK:

All materials used in the work shall be new and of good quality, conforming to the relevant specifications as per good engineering practice.
All the materials proposed to be used in the work should be got approved from Engineer in Charge before use in work.
The materials to be supplied / provided by the contractor in execution of the work should be ISI marked, wherever applicable and of make as specified in the agreement. Where the make of any particular material is not specified in the contract document, the material shall be supplied as per makes desired by the engineer-in-charge.
It will be the responsibility of the contractor / bidder to ensure use of genuine materials in the work. The department reserves the right to get (any / all materials / components) inspected by the manufacturer or their authorized representatives at any stage of the execution of work. If any of the materials, equipments supplied and used in work is found spurious at any stage, then the department reserves the right to ask the contractor to replace it by genuine one and make suitable recovery and / or withheld suitable amount till it is done, even if any payment against that material is already made.
The department may ask for any valid document like manufacturer's test certificate, document for purchase of the material, document for import / shipment of imported materials etc. as deemed fit by the engineer-in-charge to ascertain genuinity of material supplied by / used in the work by the contractor. The contractor shall remain bound to submit all such documents to the department failing which payment may not be made or if already paid may be recovered / withheld from subsequent running account payment.
Copies of all purchase documents for all equipments, accessories, fittings, fixtures etc. which carry guarantee / warrantee shall be handed over to the department in suitable form so that proper guarantee of materials are available to the department.
All the equipments and their components and all the materials to be used in the work shall be suitable for the environmental conditions at the location of the work.
The materials to be supplied in this work shall be scheduled in such a way that miles stones are achieved and no shortfall is there. At the same time materials should be brought at sight in phases in such a manner so that they are not brought much in advance at site and dumped in work site for long period before installation and guarantee / warrantee of the materials are available for full period as per tender conditions. If the materials / equipments are supplied at site much before actual use in work, the department shall not remain bound to make payment for such items of work involving the said materials / equipments. The decision of the engineer in charge will be final and binding on all.
Dismantle materials, if any, should be returned to the department unless otherwise anything in contrary has been specifically stated in the tender document / SOQ.

RATES :
Unless otherwise provided in the schedule of quantities of the work the rates tendered by the contractor shall be all inclusive and shall apply to all heights, lifts, leads and depths of the building and nothing extra shall be payable to him on this account.

The rates for all items of work shall, unless clearly specified otherwise, include cost of all labours, materials and other inputs involved in the execution of the item irrespective of whether they have been specifically mentioned in the tender document or not.
The rates tendered shall be firm and inclusive of all taxes, duties, cess and levies as applicable and all charges for packing, forwarding, insurance, freight and delivery, installation, testing and commissioning at site, watch and ward etc. including temporary constructional storage, risks, over head charges, general liabilities / obligations and clearance from local bodies and State Fire Services, as applicable. Nothing extra shall be paid. However, fees payable to the local bodies / authorities for such clearance etc. shall be borne by the department.

ACCIDENT :

The department (CPWD) shall not have any responsibility or liability in case of any accident injury to the personnel to the contractor at work site or to the general public at the work site due to mishandling equipments by the personnel of the contractor or any other similar reason. The responsibilities and liabilities for such accidents and incidents shall be borne in full by the contractor.

AFTER SALES SERVICE :

The contractor shall ensure adequate and prompt after sales service in the form of maintenance personnel and spares as and when required with a view to minimize the break down period. Particular attention shall be given to ensure that all spares are easily available during the normal life of the installation.

REMOVAL OF SURPLUS MATERIALS AND TOOLS :

After completion of work the agency shall remove his men, materials and debris etc. from site.

QUALITYOF WORK AND WORKMANSHIP:

The contractor shall be entirely responsible and answerable for all the works done by him regarding quality, adherence to the laid down specifications, terms and conditions, warranty/guarantee etc. and he shall be liable to bear any compensation that may be levied by the department under any of the clauses of the agreement.
The materials having ISI mark shall have precedence over the one conforming to IS Specifications.
The contractor is advised to visit the site before quoting for his tender to apprise himself about the site environments and other conditions. Drawings and inventories can be seen in the office of the Engineer – in – charge.

SITE ORDER BOOK :

The contractor or his authorized representative shall sign the site order book and comply with the remarks entered their in by the representative of the department.

WATCH AND WARD :

The contractor will make his own storage of his own materials. The watch and ward of the materials and of the installations would be responsibility of contractor till the work is completed / handed over to the department. Nothing extra shall be paid to the contractor on this account.

Making payment to the contractor in any form against supply of materials / equipments / components or execution thereof shall not absolve the contractor of his responsibility of watch and ward of the equipments / materials etc. and their satisfactory functioning until the same is taken over by the department after successful installation, testing, commissioning and running in period.

No separate storage space will be provided to the contractor for storage of his materials and equipments to be brought at site and used in execution. The available open site space may however be used by the contractor for storage purposes in which case he may build up temporary store at available site space at his own cost.

VARIATION IN QUANTITY :

Quantities shown against each item of work or supply are tentative which may vary on either side (plus or minus). This variation shall, in general, be governed by clause no. 12 of the clauses of contract of CPWD form 7. The contractor should ensure from the Engineer-in-charge and from the site condition the actual quantity required / to be used / to be supplied before bringing the materials at site. In case the actual quantity of material required at the site is less than the stipulated quantity, the contractor cannot claim to supply entire quantity stipulated in the schedule of quantities of work (Schedule – A) as well as cannot demand for payment thereof. The contractor shall therefore, be very careful about the quantity of materials to be supplied / brought at site. The decision of the Engineer-in-charge in this regard shall be final and binding on the part of the contractor. Even if initial payment for supply of materials is made in any form for bringing material at site and if it is found at later stage that the actual requirement is less as per site requirement or as per decision of the Engineer-in-charge, the contractor shall have to take back the additional quantity brought / supplied at site and necessary adjustment shall be made from his next bill on this account. No claim in this regard shall be entertained.

NATURAL CALAMITY :

No payment will be made to the contractor for any damage caused by rain, snow fall, floods, dampness, fire, sun or any other natural cause whatsoever during the execution of work. The damage to the work due to above reason, if any, shall have to be made good by the contractor at his own cost and no claim on this account shall be entertained.

INSPECTION AND TESTING :

The Engineer-in-charge or his authorized representative may inspect any material at manufacturers' works and may witness routine tests as per relevant Indian Standard Specifications or other relevant specifications at manufacturers' works.

The contractor shall give in writing advance notice to the Engineer-in-charge and arrange for such inspection / presence for testing at manufacturers work. The TA/DA etc. of the departmental personnel who will be deputed to witness the tests etc. shall be borne by the Department.

The Engineer-in-charge or his authorized representatives shall have, at all the reasonable times, access to the contractors premises or works or other works where manufacturing / fabrication shall be done and shall have the power, at all reasonable times, to inspect and examine the materials and workmanship during its manufacture or fabrication.

Inspection of imported materials at foreign works shall however not be carried out by the department. These materials shall be inspected and tested at site. Manufacturers' original test certificates and document of import / shipment should be provided to the department along with the materials without which no payment should be made to the contractor.

The contractor shall arrange for all the materials and labour required in connection with inspection of equipment or for any testing to be carried out at his works / manufacturers' works or at site of installation. Notice of such inspection / presence for testing shall be given by the contractor to the Engineer-in-charge at least fifteen days in advance.

Notwithstanding approval for such tests / inspection of equipments / components by the Engineer-in-charge or his authorized representative, the contractor shall be required to perform site tests as desired by the Engineer-in-charge and prove the correctness of ratings and performance of equipments / components and materials supplied and / or installed by him as per contract specifications and conditions at his own cost.

The Engineer-in-charge reserves the right to reject any equipment / machinery / material should it, on tests after installation, be found not to comply with contract specifications or its performance is not satisfactory.

Final inspection and testing will be done by the engineer-in-charge or his representative as per details to be indicated by the engineer-in-charge.

It shall be the responsibility of the contractor to get the installation inspected and passed by the local authorities concerned, as may be required by the local bye laws. The contractor will extend all help including test facilities to the representatives of the local bodies. In case the contractor fails to make desired facilities available during inspection, the department reserves the right to provide the same at the risk and cost of the contractor. The observation of the local authorities will be promptly attended by the contractor. The installation will be accepted by the department only after receiving clearance from the local bodies / fire authorities. The inspection charges leviable by the local / statutory authorities for the inspection shall however, are borne by the department.

COMPLETION DRAWING AND MANUAL :

In addition to the mode and form of submission of completion drawings and manuals as stipulated in the relevant CPWD Specifications for various sub-heads of E&M works, the contractor shall also submit soft copy of the completion drawings in CD / DVD.

POWER SUPPLY AND WATER SUPPLY :

No Power & Water Supply shall be provided by the department for the purpose of execution of the E&M work, except for testing and commissioning of installations. The contractor shall make his own arrangement in this regards. The power supply for testing and commissioning will be given at one point inside the premises and the contractor shall have to make arrangement for required cabling work and switch gears for extension of the power to the required location for testing. This will be applicable to all sub-heads of E&M works.

WORKS TO BE DONE BY THE CONTRACTOR

Unless otherwise mentioned in the tender documents, the following works shall be done by the contractor and therefore, their cost shall be deemed to be included in their tendered cost – whether specifically indicated in the schedule of quantity / work or not:

a. Foundations for equipment / structures including vibration isolation spring / pads.

b. All minor building works necessary for installation of equipment such as making of openings in walls / floors, either of RCC or brick masonry, foundation trench for fuel line and cable, making of opening in walls or in floors and restoring them to their original condition / finish and necessary grouting etc. as required.

c. Dismantling of brick wall, if any, for inserting / positioning / placement of equipment, Control panel / Diesel Tanks or for taking ducting / cable tray / pipes and rebuilding / making good the same to its original position / finish.

d. Making good all damages caused to the structure during installation and restoring the same to their original finish.

e. Responsibility to ensure safety of all materials against pilferage and damage till the installation is handed over to the department.

f. Painting of all exposed metal surfaces of equipment and components with appropriate / approved colour as required and as desired by the Engineer – in - charge.

g. Small wiring, inter-connection etc. inclusive of all materials and accessories necessary to comply with the regulations as well as proper and trouble-free operation of the equipment.

h. Closing of the cable entry points in sub-station against seepage of water rodents etc.

i. Approval / clearance of the complete installation shall be obtained by the contractor from CPCB / State Pollution Control Board / Local Bodies / Central Electricity Authority (CEA) / other licensing authorities wherever required. However application

shall be made by the Department and any statutory fee, as applicable, shall be paid by the department directly to the government authorities concerned.

Date of taking over of the installation and date of acceptance:

The date of taking over of the installations under any sub-head of E&M works shall be the date of taking over the complete work(s) after due completion of the entire composite work and after complete test and trial run of all the major equipment's under all sub-heads of E&M works to the entire satisfaction of the engineer-in-charge subject to the guarantee clause, date of taking over the installation after stipulated period of trouble-free operation of all the E&M works shall be the date of acceptance

COMMERCIAL & TECHNICAL CONDITIONS FOR INTERNAL ELECTRICAL INSTALLATIONS

1 General:

The work shall be generally carried out in accordance with schedule of quantities and the following specifications and conditions.

CPWD General Specifications for Electrical work Part I Internal – 2023, as amended up to date.
CPWD General Specifications for Electrical work Part II External – 2023, as amended up to date.
Commercial and Additional conditions for this work.

The Indian Electricity Act, 2003 as amended up to date.

Indian Electricity Rules 1956 amended up to date.

The Agency executing the work should have valid A Grade Electrical License of Kerala for carrying out the work.

2 Guarantee & Defect Liability Period:

All equipments shall be guaranteed for a period of 12 Months (except LED fittings including the driver which shall be guaranteed for minimum 5 years), from the date of taking over the installation by the department, against unsatisfactory performance and/or break down due to defective design, workmanship or material. The equipments or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in Charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk and cost of the contractor. The decision of the Engineer-in-charge in this regard shall be final & binding on the contractor.
The tendered shall guarantee among other things, the following vis-à-vis specifications.

a) Quality, strength and performance of the materials used.

b) Satisfactory operation during the maintenance period.

Ceiling fans, Exhaust fans are to be guaranteed for 1(one) Year including lamps.
LED fittings, as a whole including driver are guaranteed for 5 years. All the LED fittings are to be suitably engraved/ stickered inside with for date of handing over.

The guaranty for LED fittings is to be got submitted from the manufacturer also in addition to the guarantee from the contractor. The manufacturer should give undertaking that in case of discontinuation of model and non-availability of spares, they will replace the fittings with equivalent/ high end model in case of manufacturing defect during the warranty period of 5 years in Annexure – X.

Data and Programme to be furnished by the tenderers:

The Contractor shall prepare the programme chart for the execution of the work showing clearly all activities from the start of work to the completion required for the completion of the work within the stipulated period and submit the same to the Engineer-in-Charge within fifteen days after the issue of letter for commencement of the work. The Contractor shall also submit monthly programme and progress reports and update / re-schedule the same every month. These shall be submitted by the contractor in soft copy also besides forwarding hard copy of the same.

Extent of work:
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.
Minor building works necessary like making of opening in walls or in floors and restoring to their original condition, finish and necessary grouting etc as required to be undertaken.
Verification of correctness of material at Destination:

The contractor shall have to produce all the relevant records to certify that the genuine material from the manufacturers has been supplied and erected.

3. The main contractor shall also enter into an Affidavit of 'Memorandum of understanding' with the approved associated contractor on Non-Judicial Stamp Paper as per the enclosed proforma and submit this 'MOU' duly completed (duly signed by him and the associated Contractor) before commencement of work.

4. Executive Engineer (Elect.) shall be the Engineer-in-Charge as far as E & M works are concerned. Separate tender form for E & M component is appended with this tender. It will be obligatory on part of the main contractor to sign the tender documents for all the components.

5. The main agency shall be responsible for all acts of omissions and submissions of the Associated Contractor engaged by him, even with approval of department.

6. Approval of the Engineer-in-charge shall be taken well in advance for all the materials to be supplied and used in all the works by the contractor.

7. The contractor has to make his own arrangements for stores and watch and ward and no extra claim for this will be entertained.

8. Running payment for Electrical/Mechanical components shall be made by the EE (E) directly to the main Contractor. The main contractor shall make the payment to associated Contractor within 15 days of receipt of each running account payment.

9. Payments terms:

On account payments for part work (after stipulated and statutory deductions) as assessed by the Engineer – in-charge for the applicable items in the Contract shall be payable at part rates not exceeding the percentage indicated against the stages of work.

A] Items connected with point wiring, circuit wiring, sub-main wiring, power point wiring and light plug wiring.

S.No.	Stage of work	Percentage of Rate
A	Supply of Material	70%
B	Installation of Material	20%
C	On completion of item and after testing and commissioning.	10%

For other items, the part rates will be decided by the Engineer-In-Charge of the work and shall be binding on the contractor.

10. The main contractor shall be responsible for coordinating the activities of all works and will ensure progress of works as per laid down programme.

11. The main contractor and / or his Associated 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.

12. The contractor shall make his own arrangement at his own cost for electrical / General Tools and plants required for the work.

13. The connections, inter-connections, earthing and loop earthing shall be done by the contractor wherever required to be done for energization of the installation and nothing extra shall be paid on this account.

14. The contractor must be able to work on concrete slabs / walls as and when required and in complete coordination with the civil works. Cutting of chases in the plastered wall shall in no case be allowed. The contractor shall fix conduits and boxes in the walls soon after the brick work is completed and finish the chase to rough surface with proper cement sand mixture. Only in exceptional cases e.g. where cutting of plastered surface cannot be avoided it will be contractor’s responsibility to ensure that plastering is done to match the original finish at no extra cost.

15. The contractor shall remove all the debris due to the E & M works from the site as soon as the work is completed.

16. The wiring and conduit route shall be marked by the contractor in the drawing first, and shall be got approved from the Engineer-in-charge.

17. The rupturing capacity of the MCBs shall be 10 KA minimum. The MCBs shall have ISI mark. Quantities of MCBs of different rating of 6 amps to 32 amps shall be brought in consultation with the Engineer-in-Charge or his representative.

18. All the MCCBs shall be rated for Ics only, as specified.

19. The copper wire to be used on this work shall be FRLS type and ISI marked.

20. a. The make of switch boxes shall be the same as that of switches. Only the required knockouts of the switch boxes are to be removed for terminating the conduit pipes with PVC glands / check nuts.
    b. Make of MCB/MCCB shall be the same as the make of MCB DB.
    c. All the switch boxes, MCBDBs are to be covered with plastic sheet / petroleum gelly when installed in brick work till the plastering / painting is done to avoid sticking of cement plaster/ splashes of the paint. Cement plaster / paint are to be cleaned immediately after plaster to avoid rusting of switch boxes and MCB DBs. The plastic sheet is to be removed at the time of handing over.
    d. If two module sockets are used, one blanking plate is to be fixed by the side of socket to avoid interference of larger size plug to PS. Nothing will be paid extra for blanking plate.

21. The E & M works shall be carried out by the contractor, side by side with the progress of the civil works.

22. The Contractor shall furnish documentary proof like delivery challans of purchasing Wires, Modular switches & accessories, MCBs, MCBDB, Fittings, accessories and other items from the manufacturers or their authorized dealers to the satisfaction of the Engineer-in-charge.

23. All PVC conduits accessories shall be of the same make as conduits. The Conduits shall be terminated at switch boxes/metallic junction boxes with suitable PVC glands/check nuts.

24. Cutting of brick walls shall be with chase cutting machine only. All repairs and patch works shall be neatly carried out to match the original finish and to the entire satisfaction of the Engineer in Charge.

25. All the sub main and circuit wiring includes loose wire for connections inside switch boxes and MCBDBs. No payment for these loose wires shall be made. However wires within the cubicle panel will be measured and paid under relevant item of work.

All the circuits / sub-main wiring are to be suitably numbered with stickers / marker pen at LT panel, MCBDBs, switch boards (on backside of cover plate) for ease of maintenance. Nothing shall be paid extra on this account.

26. The contractor shall submit the completion plan separately in triplicate on blue print/ computer plotted with one set on tracing "Cloth" as per Clause-8 of the contract within 30 days of the completion of work. In case, the contractor fails to submit the plan, he shall be liable to pay a sum equivalent to 0.1% of tendered value or limit prescribed in Schedule-F, 'whichever is more' as may be fixed by the Superintending Engineer concerned and in this respect the decision of the Superintending Engineer is final & binding on the contractor.

27. To facilitate drawing of wires, 18 SWG GI fish wire shall be provided along with laying of recessed conduit for which no extra payment shall be made. Conduits laid for other services, like fire alarm, PA etc., where wiring is not done along with IEI works, fish wire shall be invariably drawn.
The connection between incoming switch / isolator and bus bar shall be made with suitable size of thimble and cable at no extra cost.

Copper conductor of insulated cables of size 1.5 Sq.mm and above shall be stranded and terminals provided with crimped lugs.

All MS junction box cover should be of phenolic laminated / good quality plastic sheet of thickness not less than 3mm and for which nothing extra shall be paid on the account. All sub-main wiring shall be terminated in the main board with suitable copper lugs and thimbles for which nothing extra will be paid on this account.

All hardware items such as screws, thimbles, GI wire etc. which are essentially required for completing an item as per specifications will be deemed to be included in the item even when the same have not been specifically mentioned.

All hardware items such as nuts/ bolts/ screws/ washers etc. to be used in work shall be zinc/ cadmium plated iron.

Any conduit which is not be wired by the contractor shall be provided with GI fish wire for wiring by some other agency subsequently. Nothing extra shall be paid for the same. While laying conduit, suitable size junction boxes shall be provided for pulling the wire as per the decision of the E-in-C.

Materials to be used in work are to be ISI marked. The make of the materials have been indicated in the list of acceptable makes. No other makes will be acceptable. The materials to be used in the work shall be got approved by the Engineer in Charge / his representative before its use at site. The E-in-C shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not acceptable.

Where switches/ sockets/ regulator/ telephone/ TV / internet outlets are to be provided, the same shall be of only one make.

While laying conduits for fire alarm system, sufficient junction outlets are to be provided as per the direction of the Engineer-in-Charge for detectors as required, for which no extra payment shall be made.
Wherever light fittings are proposed to be provided on the false ceiling, the respective light / fan point wiring will have to be brought up to the terminal of the light fittings / fans by the contractor. Flexible metal conduits shall be used for drawing wires from PVC conduits on ceiling to fittings on false ceiling and nothing extra shall be paid to the contractor for the same. The height from false ceiling to ceiling is about 1.2 metres.

All statutory deductions shall be made from the bills.

INSURANCE AND STORAGE:

All consignments are to be duly insured up to the destination from warehouse at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over duly installed, tested and commissioned.

LIST OF PREFERRED MAKES OF MATERIAL

S.No	Product	Make
1.	Wires (PVC Insulated copper conductor cable FRLS – ISI marked)	RR Kabel/ Havells / Finolex/ Polycab/Anchor/ /L&T/KEI/Power Flex/Q Flex
2.	XLPE insulated PVC sheathed AI, Cu & Control cables.	Universal/RPG cables/ Finolex/ CCI/ /Havells/ RR Kable/ Gloster/ KEI/ polyab
3.	M S Conduit & Accessories of MS Conduit (ISI Marked)	BEC/ AKG /NIC/Steel Kraft/ Gupta/ VIMCO RMCON/Javeri/ BALCO
4.	PVC Conduits (Colour Gray/Ivory)	Precision/polycab/AKG/Finolex/ Konseal/ BEC/Asian /Nihar/ Anchor Panasonic/ Avonplast /Modi/ Vasvai/Emjay/Javeri/DEC/Anchor/ BALCO/Aizar
5.	MCBs/RCCBs/DBs/MCBs/ isolator	Legrand/Siemens /Hager/ Schneider Electric/ L&T/ABB
6.	MCCB	Legrand- DX3 /Siemens -5SX4/L&T-dsine/ Schneider –ACT19/ABB
7.	Modular type switches/GI Boxes/Sockets TV/Telephone /LAN socket Outlet etc for Normal application	Legrand-Myrius-Arteror/Schneider-Opale-Livia/MK-Elements/ Crabtree/ Panasonic/Havells(ORO)/MK-Logic Plus/Honeywell (Benz Plus)/Anchor/(Roma Plus)/Savic/Crab tree-Athena/Polycab/C&S
8.	Rising main compact type i/c tap off boxes, End Feed Boxes &MCCBs	Legrand/ Zucchini/Siemens/ ABB-Megaduct (If Air Insulated)/Godrej (S.M.A.R.T)/C&S/L&T/Schneider
9.	DLP Trunking	Legrand/ OBO Betterman/ Schneider /MK
10.	Ammeter/Voltmeter/MF Meter/ Energy Meter/Intelligent Meter	AE/MECO/L&T(only digital type to be used)/Scomec(Diris)/ Schneider/ HPL/ C&S/Conserv/ Kaycee/ Cropmton Groves
11.	Selector Switches	BCH /Kaycee/ Rishabh/ Conserv / AE /Crompton Groves
12.	LED Indication lights	Schneider/Legrand/L&T/BCH/Eaton/Polycab/ Luker
13.	LED Exit Emergency Light (With 2 Hr battery backup)	Prolite/Bajaj/Schneider /Legrand/Philips
14.	Push buttons	L&T/Siemens/BCH/Eaton/C&S
15.	Connector and Terminal Block	Elmex/Connectwel/Essen
16.	Lugs and Thimbles	Dowells/Multi/Capital/Jainsons /Commet/Prabath/ Schneider Electric

17.	Capacitor and Harmonic block reactor Thyristor Module	L&T/ Schneider/Neptune (Ducati)/Legrand
18.	Panel board/Feeder pillar/Meter board	CPRI approved manufacturer.
19.	Indoor lighting Fixtures	Philips/Disano /Igguzini/Regent/Osram/LT (Lighting Technologies)/Eveready/ Bajaj/Surya/ Halonix / Wipro /Jaquar/ Corvi/Syska Ploycab/ Luker/HPL/Havells/ Crompton Greaves /Kolor
20.	Outdoor lighting Fixtures	Philips/Osram/LT (Lighting Technologies)/ Bajaj Halonix / Wipro /Havells/ Crompton Greaves/Trilux
21.	Exhaust fan	Crompton/ Havells /Orient/ Bajaj/ Almonard/ Polycab
22.	Angle holder /Batten holder	ISI Marked Kinjal /Emperor/ Anchor/ K555/ Polycab
23.	Call bell/Buzzer	Anchor/Leader/Rider/Polycab
24.	G.I. pipes	TATA/ JINDAL-Hissar/ ZENITH Birla/Sail
25.	Co-axial TV Cable	Havells/ Anchor/ Finolex/ L & T/ RR Kabel/V-Guard
26.	Contactors/ Timers	Legrand / L&T/ Siemens/ Schneider Electric
27.	Ceiling rose	Antex/ Leader/ Emperor/ Anchor/Lisha
28.	PVC batten/ Angle Holders	Antex/ Leader/ Emperor/ Anchor/Lisha
29.	HDPE Pipe (ISI Marked)	Supreme/ Tele REX/ Ashirvad/ Duraline/ Suriya
30.	GM Valves (ISI marked)	Leader/ Zoloto/ Deepak
31.	Submersible pump set	Kirlosker, KSB, Crompton,Wilo
32.	Street light pole	Philips/Crompton/Havells/Bajaj/Wipro
33.	Capacitor	L&T/ Schneider/ Legrand/ Neptune (Ducati)
34.	Current Transformers	Automatic Electric/ Kappa/ L&T/ Gilbert
35.	Instrument meters	Rishab / Automatic Electric /Prok Devices/ Conzerv/ Secure
36.	Cable Glands	Dowells/ Jainsons/ Braco/ Comet/ peeco/ Gripwell/Jainsons/peeco/Prabath/Raychem/Grandlay
37.	Ceiling fan (5 star rated)	Crompton / Havells / Orient/ Atomberg/Bajaj
38.	UTP Cable /Telephone Cable	Legrand/Molex/Finolex/Commscope/Panduit-Pannet/Havells/Batra/Henlay
39.	Geyser	Crompton/Jaguar/Recold/Havells
40.	Solar LED street light,	PHILIPS/WIPRO/BAJAJ/CROMPTON/HAVELLS
41.	All other items not covered above	As per approval of the Engineer-in-charge.

PART – D

Schedule of Quantities

SCHEDULE OF QUANTITIES (CIVIL)

Name of Work: Renovation of Water Supply, Sanitary, Drainage System, Reconstruction of Damaged Compound Wall and External Painting, Electrical Works etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
1	**EARTH WORK**				
1.1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within the campus.				
1.1.1	All kinds of soil.	364.00	Cum	344.35	125343
1.2	Excavating trenches by mechanical/ manual means of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, for all depth, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within the campus.				
1.2.1	All kinds of soil				
1.2.1.1	Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia	25.00	metre	465.86	11647
1.3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead within the campus and for all lift.	105.00	Cum	259.29	27225
1.4	Surface dressing of the ground including removing vegetation and in-equalities not exceeding 15 cm deep and disposal of rubbish, lead within the campus and all lifts.				
1.4.1	All kinds of soil	1000.00	sqm	45.18	45180
2	**CONCRETE WORK**				
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
2.1.1	1:2:4 (1 cement : 2 coarse sand(zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	5.00	Cum	10422.40	52112
2.1.2	1:5:10 (1 cement : 5 coarse sand(zone-III) : 10 graded stone aggregate 20 mm nominal size)	35.00	Cum	8623.40	301819
3	**REINFORCED CEMENT CONCRETE**				
3.1	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level :				
3.1.1	1:1.5:3 (1 cement : 1.5 coarse sand (zone-III) derived from natural sources : 3 graded stone aggregate 20 mm nominal size derived from natural sources)	40.00	Cum	11966.54	478662
3.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
3.2.1	1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) derived from natural sources : 3 graded stone aggregate 20 mm nominal size derived from natural sources)	3.00	Cum	14357.27	43072
3.3	Centering and shuttering including strutting, propping etc. and removal of form for :				
3.3.1	Foundations, footings, bases of columns, RCC band above RR masonry etc. for mass concrete	80.00	Sqm	518.77	41502
3.3.2	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	310.00	Sqm	1114.54	345507
3.4	Centering and shuttering including strutting, propping etc. and removal of form for				
3.4.1	Edges of slabs and breaks in floors and walls				
3.4.1.1	Under 20 cm wide	140.00	metre	275.89	38625
3.5	Providing, hoisting and fixing at ground level precast reinforced cement concrete work in drain cover slab of required size with perforations for draining rain water including the cost of required centering, shuttering but , excluding cost of reinforcement, with 1:1.5:3 (1 cement : 1.5 coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size).	11.00	Cum	13533.50	148869

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
4	**MASONRY WORK**				
4.1	Brick work with non modular fly ash bricks conforming to IS:12894, class designation 7.5 average compressive strength in foundation and plinth level in :				
4.1.1	Cement mortar 1:6 (1 cement : 6 Coarse sand)	23.00	Cum	8967.68	206257
4.2	Brick work with non modular fly ash bricks conforming to IS:12894, class designation 7.5 average compressive strength in super structure above plinth level up to floor V level in :				
4.2.1	Cement mortar 1:6 (1 cement : 6 Coarse sand)	20.00	Cum	11578.67	231573
4.3	Half brick masonry with non modular fly ash bricks of class designation 7.5, conforming to IS :12894, in super structure above plinth and upto floor V level.				
4.3.1	Cement mortar 1 : 4 (1 cement : 4 coarse sand)	5.00	Sqm	1462.85	7314
4.4	Providing and and filling in sunken floor with Autoclaved Aerated concrete(AAC) broken brick bats in cement mortar 1:4(1cement: 4coarse sand) and finished with 100mm thick 1:2:4 (1 Cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 8 mm & below nominal size derived from natural sources) as per direction of Engineer-in-Charge.	32.00	Cum	7505.16	240165
5	**STONE WORK**				
5.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20mm nominal size) upto plinth level with :				
5.1.1	Cement mortar 1:6 (1 cement : 6 coarse sand).	56.70	Cum	9671.99	548402
6	**CLADDING WORK**				
6.1	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, laid with cement based high polymer modified quick set tile adhesive type III (water based) conforming to IS : 15477, in average 6 mm thickness, including grouting of joints (Payment for grouting of joints to be made separately).	652.00	Sqm	1655.53	1079406

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
7	**WOOD WORK**				
7.1	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. including priming coat with approved steel primer all complete.				
7.1.1	Fixed to openings /wooden frames with rawl plugs screws etc.	20.00	Kg	315.31	6306
7.2	Providing and fixing aluminium sliding door bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with nuts and screws etc. complete :				
7.2.1	300x16 mm	3.00	Each	401.17	1204
7.3	Providing and fixing aluminium tower bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with necessary screws etc. complete :				
7.3.1	250x10 mm	6.00	Each	152.33	914
7.3.2	150x10 mm	228.00	Each	109.20	24898
7.4	Providing and fixing aluminium handles ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with necessary screws etc. complete :				
7.4.2	100 mm	160.00	Each	78.78	12605
7.5	Providing and fixing magnetic catcher of approved quality in cupboard / ward robe shutters, including fixing with necessary screws etc. complete.				
7.5.1	Triple strip vertical type	116.00	Each	69.45	8056
7.6	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness. The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat. Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	395	metre	755.30	298344
7.7	Providing and fixing to existing door frames.				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
7.7.1	30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	160.00	Sqm	4922.15	787544
8	**STEEL WORK**				
8.1	Providing & fixing fly proof wire gauze to Aluminium windows & doors complete as per the directions of the Engineer in Charge.				
8.1.1	Stainless steel (grade 304) wire gauze of 0.24 mm dia wire and 1.4 mm aperture on both sides.	193.00	Sqm	1499.56	289415
9	**FLOORING**				
9.1	Providing and laying Ceramic glazed matt finished floor tiles of size 300x300 mm(thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick bed of cement mortar1:4 (1 Cement : 4 Coarse sand), jointing with grey cement slurry @3.3kg/sqm including pointing the joints with white cement and matching pigments etc., complete.	140.00	Sqm	1740.00	243600
9.2	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade(0.10 kg of hardener and 0.20 kg of resin per kg), including filling/grouting and finishing complete as per direction of Engineer-in-charge.				
9.2.1	Size of Tile 300x300 mm	795.00	Sqm	817.68	650056
9.3	Deduct for not grouting the joints with white cement and matching pigments in the items of fixing of vitrified tiles	795.00	Sqm	-17.59	-13984
10	**FINISHING**				
10.1	12 mm cement plaster of mix :				
10.1.1	1:6 (1 cement: 6 fine sand)	830.00	Sqm	440.99	366022
10.2	15 mm cement plaster on the rough side of single or half brick wall of mix :				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
10.2.1	1:6 (1 cement: 6 fine sand)	180.00	Sqm	506.67	91201
10.3	12 mm cement plaster finished with a floating coat of neat cement of mix :				
10.3.1	1:4 (1 cement: 4 fine sand)	260.00	Sqm	562.96	146370
10.4	6 mm cement plaster of mix :				
10.4.1	1:3 (1 cement: 3 fine sand)	50.00	Sqm	397.46	19873
10.5	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone / PU/ Graphene additives of required shade of "apex ultima protek" of Asian paints or "Berger weather coat longlife 15" of berger paints or Dulux Weathershield powerflex, or excel everlast 14 of nerolac:				
10.5.1	New work (Two or more coat applied @ 1.43 ltr/10 sqm over and including priming coat of exterior primer applied @ 0.90 ltr/10 sqm).	500.00	Sqm	226.35	113175
10.6	Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete.				
10.6.1	On steel work	30.00	Sqm	319.81	9594
10.7	Distempering with 1st quality acrylic distemper (ready mixed) having VOC (Volatile Organic Compound) content less than 50 gram/ litre, of approved brand and of required shade and colour complete to give and even shade.				
10.7.1	Old work (one or more coats)	2082.00	Sqm	82.95	172702
10.8	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone / PU/ Graphene additives of required shade of "apex ultima protek" of Asian paints or "Berger weather coat longlife 15" of berger paints or Dulux Weathershield powerflex, or excel everlast 14 of nerolac as per the direction of Engineer in charge. The quoted rate shall include thorough cleaning of the existing surface and removal of all fungus, algae, moss and other biological growth using high-pressure water jet spray complete in all respects as directed by the Engineer-in-Charge.				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
10.8.1	Old work (Two or more coats applied @ 1.43 ltr/ 10 sqm) over existing cement paint surface.	9551.00	Sqm	173.70	1659009
11	**REPAIRS TO BUILDING**				
11.1	Repairs to plaster of thickness 12 mm to 20 mm in patches of area 2.5 sq.meters and under, including cutting the patch in proper shape, raking out joints and preparing and plastering the surface of the walls complete, including disposal of rubbish to the dumping ground, all complete as per direction of Engineer-in-harge.				
11.1.1	With cement mortar 1:4 (1cement: 4 coarse sand).	100.00	Sqm	741.48	74148
11.2	Dismantling W.C. Pan with flushing cistern/washbasin of all sizes including disposal of dismantled materials i/c malba all complete as per directions of Engineer-in- Charge.	80.00	Each	177.40	14192
11.3	Dismantling 15 to 40 mm dia G.I. pipe/CPVC pipe including stacking of dismantled pipes (within 50 metres lead) as per direction of Engineerin-Charge. (a) Internal Work- Exposed on wall and concealed pipe	1300.00	metre	4.30	5590
12	**DISMANTLING & DEMOLISHING**				
12.1	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in - charge.				
12.1.1	Nominal concrete 1:4:8 or leaner mix (including equivalent design mix)	60.00	Cum	1989.10	119346
12.2	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in-charge.	7.50	Cum	4697.92	35234
12.3	Demolishing brick work/laterite masonry manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge..				
12.3.1	In cement mortar	351.00	Cum	2725.42	956622
12.4	Dismantling doors, windows and clerestory windows (steel or wood) shutter including chowkhats, architrave, holdfasts etc. complete and stacking within 50 metres lead :				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
12.4.1	Of area 3 sq. metres and below	85.00	Each	485.77	41290
12.5	Dismantling C.I. or asbestos rain water pipe with fittings and clamps including stacking the material within 50 metres lead :				
12.5.1	75 to 80 mm dia pipe.	350.00	metre	100.14	35049
12.5.2	100 mm dia pipe	150.00	metre	103.19	15479
12.6	Dismantling G.I. pipes (external work) including excavation and refilling trenches after taking out the pipes, manually/ by mechanical means including stacking of pipes within 50 metres lead as per direction of Engineer-in-charge :				
12.6.1	15 mm to 40 mm nominal bore	200.00	metre	198.17	39634
12.7	Dismantling old plaster or skirting raking out joints and cleaning the surface for plaster including disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, for all leads including all lifts involved.	450.00	Sqm	72.30	32535
12.8	Disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, for all leads including all lifts involved.	300.00	Cum	349.18	104754
13	**ROAD WORK**				
13.1	Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.	351.00	Sqm	174.29	61176

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
13.2	Laying old cement concrete interlocking paver blocks of any design/ shape laid in required line, level, curvature, colour and pattern over and including 50 mm thick compacted bed of 6 mm thick graded aggregate, filling the joints with fine sand etc. all complete as per the direction of Engineer in-charge. (Old CC paver blocks shall be supplied by the department free of cost).	351.00	Sqm	533.06	187104
13.3	Providing and laying factory made chamfered edge Cement Concrete paver blocks in footpath, parks, lawns, drive ways or light traffic parking etc, of required strength, thickness & size/ shape, made by table vibratory method using PU mould, laid in required colour & pattern over 50mm thick 6 mm thick graded aggregate, compacting and proper embedding/laying of inter locking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand. complete all as per direction of Engineer-in-Charge.				
13.3.1	60mm thick cement concrete paver block of M-35 grade with approved colour, design & pattern.	606.00	Sqm	1383.28	838268
14	**SANITARY INSTALLATIONS**				
14.1	Providing and fixing white vitreous china pedestal type water closet (European type W.C. pan) with seat and lid, 10 litre low level white P.V.C. flushing cistern, including flush pipe, with manually controlled device (handle lever), conforming to IS : 7231, with all fittings and fixtures complete, including cutting and making good the walls and floors wherever required :				
14.1.1	W.C. pan with ISI marked white solid plastic seat and lid	43.00	Each	8619.36	370632
14.2	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require:				
14.2.1	White Vitreous China Flat back wash basin size 550x 400 mm with single 15 mm C.P. brass pillar tap	37.00	Each	2485.98	91981

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
14.3	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete.				
14.3.1	Flexible pipe				
14.3.1.1	32 mm dia	37.00	Each	158.15	5852
14.4	Providing and fixing 600x450 mm beveled edge mirror of superior glass (of approved quality) complete with 6 mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	37.00	Each	2127.14	78704
15	**WATER SUPPLY**				
15.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. : Internal work - Exposed on wall				
15.1.1	25 mm nominal outer dia. Pipes.	350.00	metre	531.21	185924
15.1.2	32 mm nominal outer dia. Pipes.	600.00	metre	686.25	411750
15.1.3	40 mm nominal outer dia. Pipes.	200.00	metre	929.93	185986
15.2	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings and fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. :Concealed work, including cutting chases and making good the walls etc.				
15.2.1	20 mm nominal outer dia .Pipes.	192.00	metre	711.19	136548

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
15.3	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings. This 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				
15.3.1	40 mm nominal outer dia. Pipes.	200.00	metre	744.85	148970
15.4	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
15.4.1	25 mm nominal bore	30.00	Each	823.37	24701
15.4.2	32 mm nominal bore	25.00	Each	912.27	22807
15.4.3	40 mm nominal bore	5.00	Each	1092.84	5464
15.5	Providing and fixing uplasticised PVC connection pipe with brass unions :				
15.5.1	45 cm length				
15.5.1.1	15 mm nominal bore	80.00	Each	129.31	10345
15.6	Providing and fixing C.P. brass shower rose with 15 or 20 mm inlet :				
15.6.1	100 mm diameter	9.00	Each	256.57	2309
15.7	Providing and fixing C.P. brass long body bib cock of approved quality conforming to IS standards and weighing not less than 690 gms.				
15.7.1	15 mm nominal bore	47.00	Each	1056.92	49675
15.8	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931.				
15.8.1	15 mm nominal bore.	15.00	Each	886.93	13304
15.9	Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931 :				
15.9.1	15 mm nominal bore.	101.00	Each	759.74	76734

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
16	**DRAINAGE**				
16.1	Providing and fixing square-mouth S.W. gully trap class SP-1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design:				
16.1.1	100x100 mm size P type				
16.1.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	44.00	Each	3581.93	157605
16.3	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) with R.C.C. top slab with 1:1.5:3 mix (1 cement : 1.5 coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design :				
16.3.1	Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) :				
16.3.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	13.00	Each	16894.04	219623
16.4	Extra for depth for manholes				
16.4.1	Size 90x80 cm				
16.4.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	2.00	metre	11675.04	23350
17	**ALUMINIUM WORK**				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
17.1	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 / paneling, C.P. brass/ stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
17.1.1	For fixed portion				
17.1.1.1	Powder coated aluminium (minimum thickness of powder coating 50 micron)	29.00	Kg	702.32	20367
17.1.2	For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately).				
17.1.2.1	Powder coated aluminium (minimum thickness of powder coating 50 micron)	152.00	Kg	839.31	127575
17.3	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item):				
17.3.1	With float glass panes of 4.0 mm thickness (weight not less than 10 kg/sqm)	2.00	Sqm	1556.78	3114
17.4	Providing and fixing aluminium casement windows fastener of required length for aluminium windows with necessary screws etc. complete.				
17.4.1	Powder coated minimum thickness 50 micron aluminium.	4.00	Each	129.58	518
18	**New Technologies and Materials**				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
18.1	Providing and applying 25 mm average thickness SBR polymer modified cement mortar in two layers for concrete surface repair and rehabilitation of existing RCC slabs, beams, columns and other concrete members, including chipping and removal of all loose, unsound, weak and deteriorated concrete using manual chisels and/or standard power-driven percussion tools of approved make, to expose sound concrete, tapering the edges and forming square shoulders to all cavities, cleaning the exposed concrete surface and reinforcement thoroughly using wire brushes and removing all dust, loose particles and debris. The prepared surface shall be suitably wetted to achieve saturated surface dry (SSD) condition, wherever required, before application.	10.00	Sqm	944.68	9447
	Providing, mixing and applying SBR polymer (of approved make) modified cement mortar in the proportion of 1:4 (1 part cement : 4 parts graded coarse sand), incorporating SBR polymer at a minimum dosage of 2% by weight of cement used, in two successive layers to achieve an average finished thickness of 25 mm, including preparation of mortar, mixing, application, compaction, finishing, proper wet curing and all materials, labour, tools, tackles, scaffolding, leads and lifts, transportation and disposal of dismantled concrete debris, complete in all respects as per manufacturer's recommendations, relevant specifications and directions of the Engineer-in-Charge.				
19	**NON SCHEDULE ITEMS**				
19.1	Providing water proofing in the sunken portion of the toilet/bathroom with the following specifications below.	340.00	Sqm	1176.65	400061
	Surface Preparation: Surface base preparation of cleaning must be pressure-washed with water with, a minimum working pressure of 1,400 psi, brushing and removal of flacky materials, grouting the porous area with cementitious grout, sealing the minor cracks, proper coving between slab and wall junctions.				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
	Providing angle Fillet for all offsets and Vertical Upstands: Remove all damaged tiles and construct 50mm thick angle fillet with CM of 1:3 admixed with SBR latex of Dr. Fixit /Sika/Fosroc or equivalent at a dosage of 12-15% of Cement and a bond coat of SBR latex of Dr. Fixit /Sika/Fosroc or equivalent mixed with Cement at a ratio of 1:1.				
	Waterproofing system: Providing and applying two component high performance polymer modifed cementitious waterproofing coating Fastflex Ultra of Dr. Fixit /Sika/Fosroc or equivalent, having minimum elongation of 200%, Tensile strength 1.5 N/mm2 (As per ASTM D412), Adhesion Strength 1.2 Mpa (As per ASTM D 7234), Crack bridging up to 2mm (As per ASTM C836) and food grade certification by CFTRI, including reinforcing the coating with 45gsm glass fibre mesh at all corners. The coating shall be applied with a total consumption of 2.2Kg/Sqm in two coats to achieve 1.2mm thickness on the entire horizontal surface and vertical surface upto 500mm as per manufacturer's specification and methodology. The system includes pre-wetting the surface to attain SSD (surface saturated dry) condition before application of the waterproofing coating, followed by the application of waterproof coating.				
	NOTE: The capability of the assigned waterproofing contractor to execute the specified work shall be verified by the manufacturer’s technical team through a joint site visit with the technical team of CPWD and confirmed in writing by email, along with a valid certificate, prior to commencement of the work. The waterproofing works shall be executed under the guidance of the manufacturer’s technical expert. The technical expert shall conduct periodic quality audits of the waterproofing works and submit quality audit reports to the Engineer-in-Charge.				
19.2	Providing and fixing PVC multi or single floor trap of inlet 110 mm to oulet 75 mm including all necessary fitting etc.. As per direction of engineer incharge.	117.00	Each	245.65	28741

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
19.3	Providing & fixing hand shower (Health faucet of ABS body), 8mm dia and 1 meter long ss braided connection pipe & wall hook of approved make all complete as per manufacturers specification and direction of Engineer in charge.	19.00	Each	1022.35	19425
19.4	Providing and fixing Type B UPVC SWR pipes of approved brand and manufacture confirming to IS 13592 including jointing with rubber ring with good quality lubricant for vertical stacks in shafts and in sunken floor slabs or under slab with solvent cement as per IS:13592-1992 for pipes and IS:14735 for fittings, inclusive of all necessary specials like bends, tees, offsets, junctions etc.., laid under floor/under ceiling / on walls with suitable clamps and specials curing necessary chasing, jointing and resorting to original condtions, testing etc..,including cost of materials, labour, machinery and equipements with all leads and lifts, loading and unloading charges, scaffolding, transportation cost and conveyance, all other incidential charges etc..,at all levels complete for successful completion of work as per specifications and as per the direction of Engineer-in-charge.				
19.4.1	110 mm dia UPVC SWR pipes	195.00	metre	711.82	138805
19.5	Providing and fixing Type B UPVC SWR pipes of approved brand and manufacture confirming to IS 13592 including jointing with rubber ring with good quality lubricant for vertical stacks in shafts and in sunken floor slabs or under slab with solvent cement as per IS:13592-1992 for pipes and IS:14735 for fittings, inclusive of all necessary specials like bends, tees, offsets, junctions etc.., laid under floor/under ceiling / on walls with suitable clamps and specials curing necessary chasing, jointing and resorting to original condtions, testing etc..,including cost of materials, labour, machinery and equipements with all leads and lifts, loading and unloading charges, transportation cost and conveyance, scaffolding, all other incidential charges etc..,at all levels complete for successful completion of work as per specifications and as per the direction of Engineer-in-charge.				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
19.5.1	75 mm dia UPVC SWR pipes	455.00	metre	509.38	231768
19.6	Providing and fixing Ready-made RCC (Reinforced Cement Concrete) septic tanks, multi-chambered underground sewage management units engineered from high-grade concrete M40 for extreme structural strength. Earth work will be payable seperately.**(30 user capacity)**	13.00	each	33222.60	431894
19.7	Providing and carrying out complete cleaning of existing septic tanks, including removal of accumulated sludge, cleaning of tank walls and floors, and removal of all sewage and wastewater. The sewage/wastewater shall be collected, transported through suitable tankers and disposed of at a designated location approved by the concerned Local Body. The removed sludge shall also be transported and disposed of at an approved disposal facility in accordance with the applicable rules and regulations. The work shall include engagement of trained manpower, necessary tools and plants, safety equipment, pumps, hoses, tankers, transportation, loading, unloading and all incidental operations required for satisfactory completion of the work. The septic tanks shall be thoroughly cleaned and left in a hygienic condition after completion.	5.00	each	31838.35	159192
19.8	Disposal of Sludge collection bags, wherever required, shall be paid for separately. The rate shall include all labour, materials, machinery, tools and plants, transportation, disposal charges and all other incidental charges, complete as per the directions of the Engineer-in-Charge.				
19.8.1	Collection, removal, transportation and safe disposal of sludge accumulated in the septic tank at a disposal facility approved by the concerned Local Body, in accordance with applicable rules and regulations, including all necessary manpower, tools, plants, equipment and incidental charges, complete as directed by the Engineer-in-Charge.	250.00	per bag of 20kg	598.00	149500
19.9	Providing and Fixing C.P. brass towel rail of 600 mm long of approved make as per manufacturers specification and complete as per the directions of Engineer in charge.	39.00	Each	1613.80	62938

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
19.10	Providing and fixing SS 304 Square frame 150x150mm with circular Gratings 100mm dia lid for traps in floor complete, including cost of cutting and making good the floors :				
19.10.1	Rectangular type with openable circular lid.	154.00	Each	276.85	42635
19.11	Providing borepacking treatment around pipe entry/exit locations from internal side during the time of water proofing of the sunken with the following specifications.				
	The gap between the pipes / sleeves / bore and RCC shall be free from dust, laitance, oil and water using compressed air or by mechanical measures. All Pipes to be placed/inserted in the core cut areas shall be aligned properly prior to bore packing. Cleaning / Roughening the inside surface of the bore hole and PVC Pipe outer area. Pipes to be inserted in the core cut areas with effective leak-free shuttering system. The pipe to be inserted, appropriately roughening with hacksaw-blade, applying a coat of Epoxy bonding agent of Dr. Fixit /Sika/Fosroc or equivalent and sprinkle the quartz sand / fine sand and allow to dry for 6 hrs. Filling the gap between PVC pipe and core cut with Pidigrout 10M / Micro Concrete of Dr. Fixit /Sika/Fosroc or equivalent including shuttering the gap bottom with backer rod or with suitable material.				
	Apply a coat of waterproof coat and place correct dimension comb cut piece of 40GSM geotextile fleece and place it across pipe and saturate it with waterproof chemical. Place another 40GSM geotextile fleece cut in flower pattern and placing at comb cut fleece and ensure to saturate the geotextile fleece with waterproof chemical.				
19.11.1	75mm Dia	111.00	each	761.35	84510
19.11.2	110mm Dia	40.00	each	844.40	33776
19.12	Supply of the following workers at site with necessary tools required for attending repair works as and when required and as directed by the Engineer-in-Charge				

Sl. No.	Description of Item	Qty	Unit	Rate	Amount
19.12.1	Plumber	6.00	each	1465.95	8796
19.12.2	Helper	6.00	each	1244.45	7467
19.13	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto all level.				
19.13.1	Low Alloy steel reinforcement bars of grade Fe-500D or more. It shall comply with Latest Version of IS 1786 and additional requirement mentioned in the NIT	4000.00	Kg	136.95	547800
19.14	Credit for taking away the dismantled material (unserviceable) received from work such as reinforcement bars, GI pipes, CI or SCI pipes, MS tanks, CI flushing cistern, M.S. grills ,aluminium sections etc. as per direction of Engineer –in-Charge. (Actual weight of material at site shall be measured).	5961.00	Kg	-15.73	-93790
19.15	Credit for taking away the dismantled material (unserviceable) received from work such as flushing cistern, bib cock, shower etc. as per the direction of Engineer –in- Charge. (Actual nos. of material at site shall be measured).	258.00	Each	-24.58	-6341
	Total				**16050467**

SCHEDULE OF QUANTITIES (ELECTRICAL)

Name of Work : Renovation of water supply, sanitary, drainage system, Reconstruction of damaged compound wall and external painting, Electrical works etc. for the Central Excise & Customs Quarters at Beach Road, Calicut. SH: Balance Work

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
1.0	Supplying and erection of 5 metre high hot dipped galvanised octagonal type single section street light pole with 130 mm dia at bottom and 70 mm dia at top made up of 3mm thick sheet > 65 microns with confirming windspeed of 47 M/s and having a base plate of size 220mm x 220mm x 12mm by using 4 nos "J" type M16 x 600 mm long steel grade EN8 foundation bolts and nuts including providing CC 1:2:4 (20 mm stone aggregates) foundation of size 500 x 500mm and depth 1200 mm with 8mm dia. tor bars stirrups @ 190 mm c/c (300 mm above ground level) .This reinforcement shall conform to IS:1786 latest edition. The foundation shall extend above surrounding ground/driveway level for 300 mm and have slant 80mm dia PVC sleeve cast in to foundation for cable entry. The hot dipped arm bracket having suitable arm Cap (30 cm high) & bracket length and angle (0.5 metre length and 5-15 degree angle with ground) fixed to pole with nut and bolts. The pole should have inbuild door munting 500mm above from ground with proper gaskets & alien key arrangemnet for safety locking.The pole The pole shall be conforming to standard BSEN10025 ; BESEN ISO 1461 and shall be as approved by Engineer-in-Charge as per requirement.	6	Nos	23008	1,38,048

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
2	LED Street light fixture, powder coated pressure die cast aluminium body (System lumen efficacy ≥105 <120 lm/Watt) Supplying, installation, Testing & Commissioning of Street light LED fixture powder coated pressure die cast aluminium body with driver as per the requirement with Driver efficiency >85%, Input voltage: 140-270 Volt AC, freq 50/60 hz, Operating temp range -5 deg to 50 deg centigrade, internal surge protection of 5 KV L,N,E as per IEC 61000-4-5, Driver efficiency >85%, THD < 10% as per IEC 61000-3-2, P. F.≥0.95, IP-66, IK-10, CRI ≥70, under voltage and over voltage protection, EMI-EMC As per CISPR -15, lenses for beam angle as per IESNA type I/II/III as per the width of the road and the project requirement., suitable to fit in up to 65mm dia pipe, 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 ANS Bin), SDCM (Standard Deviation Colour Matching) <5, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard complete in all respect i/c external connections with 1.5 sq. 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).				
2.1	45 watt	10	Each	1803	18,030
3	Supplying and testing of following size one number XLPE insulated and PVC sheathed armoured aluminium conductor power cable of 1.1 kV grade conforming to IS 7098 (Part 1) 1988 as required.				
3.1	2 X 10 sq. mm	200	Metre	305	61,000
3.2	3.5 x 35 Sq.mm	20	Metre	679	13,580
3.3	3.5 x 70 Sq.mm	10	Metre	1241	12,410
3.4	3.5 x 95 Sq.mm	15	Metre	1556	23,340

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
4	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
4.1	Upto 35 sq. mm	220	Metre	62	13,640
4.2	Above 35 sq. mm and upto 95 sq. mm	25	Metre	95	2,375
5	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.				
5.1	63 mm dia (OD-63 mm & ID-51 mm nominal)	150	Metre	381	57,150
6	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required.				
6.1	63 mm dia (OD-63 mm & ID-51 mm nominal)	50	Metre	180	9,000
7	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
7.1	2 X 10 sq. mm (19mm)	12	Each	389	4,668
7.2	3½ X 35 sq. mm (32mm)	8	Each	577	4,616
7.3	3½ X 70 sq. mm (38mm)	4	Each	715	2,860
7.4	3½ X 95 sq. mm (45mm)	6	Each	903	5,418
8	Supplying and making straight through joint with heat shrinkable kit including ferrules and other jointing materials for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
8.1	3½ X 35 sq. mm	4	Each	3561	14,244
8.2	3½ X 70 sq. mm	2	Each	4782	9,564
8.3	3 X 95 sq. mm	3	Each	5041	15,123
9	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.	200	Metre	183	36,600

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
10	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke and salt as required.	16	Set	10109	1,61,744
11	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	80	Metre	997	79,760
12	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	40	Metre	379	15,160
13	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required.				
13.1	Group C	8	Point	1312	10,496
14	LED Batten light (System lumen efficacy ≥105 <120 lm/Watt) Supplying, installation, Testing & Commissioning of LED surface mounted Batten light of following body material and construction as per IS: 10322 with driver (Replaceable) as per the requirement with Driver efficiency >85% ,Operating voltage AC 140-270 Volt, freq 50/60 hz, Operating temp range -5 deg to 40 deg centigrade, internal surge protection of 2.5 KV with Short & Open circuit protection, THD < 10% , P. F.≥0.95, IP20, CRI ≥80, 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 of relevant BIS standard and trade mark certificate (T.C.). 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 <120 lm/Watt output. LM79 & LM80 Test report and all testing required for LED fixtures as per BIS				

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
	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)				
14.1	18-22 watt	157	Each	899	1,41,143
15	Supplying and fixing DP sheet steel enclosure on surface/ recess along with 25/32amps 240 volts "C" curve DP MCB complete with connections, testing and commissioning etc. as required.	2	Each	1661	3,322
16	**(Metering panel boards for Block-I&II (Total 6 Nos. quarters)**				
	SITC of indoor Floor mounting, free standing, compartmentalised, powder coated CPRI approved cubical meter board , suitable for distribution of 3 Phase, 4 Wire, 440 volts 50 Hz AC Supply, fabricated with CRCA sheet steel not less than 2 mm thick for structure and 1.6 mm for door, having nominal front surface area of 2.30 sq.mtr and depth 300 mm (minimum), dust and vermin proof, with busbar chamber, cable alleys, detachable gland plate for cable entry at top/bottom or both as per requirement and supported with ISMC 75 mm MS Channel base frame, each metering compartment having glass windows of size 100mmx100mm for meter reading, sealing arrangement for all metering, earth studs, earth terminal block/strip in the out going compartment, loop earthing with 10 sq.mm PVC green wire, internal wiring between busbar and energy meter with 10.sq.mm copper conductor cable with lugs with the following switch gears/accessories as per KSEB norms and conditions.The meter panel shall be supported in MS structure with concrete foundation as per requirement of site and as per drawing approved and issued by Engineer in charge including credit for old panel etc complete as required.				
	A) INCOMER:				
	i) 100 A MCCB FP 25 kA ,Icu=Ics=100% -1 No				
	B) BUSBAR:				
	Bus bar chamber with 4 strip copper bus bar of suitable length having current carrying capacity of 125 Amps -1set				

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
	C)OUTGOINGS:				
	METER COMPARTMENT Space for three phase energy meter and providing Suitable size 3mm thick phenolic laminated sheet mounted with 32 amps rewireable type porcelain fuse unit (cutout)-3 Nos, 32 A Neutral link meter reading glass arrangement in meter compartment door with hinged door having locking arrangement,40 Amps FP Isolator for quarter - 6 set.				
	D) Cable alley				
	The cable alley of suitable size for rearranging or looping of cable/wires at top and bottom or left and right etc as required	1	Job	118582	1,18,582
17	**Metering panel boards for Block-III(Two number of panel for left 5 Nos. quarters and right 5 Nos quarters)**				
	SITC of indoor Floor mounting, free standing, compartmentalised, powder coated CPRI approved cubical meter board, suitable for distribution of 1 Phase, 2 Wire, 230 volts 50 Hz AC Supply, fabricated with CRCA sheet steel not less than 2 mm thick for structure and 1.6 mm for door, having nominal front surface area of 1.20 sq.mtr and depth 300 mm (minimum), dust and vermin proof, with busbar chamber, cable alleys, detachable gland plate for cable entry at top/bottom or both as per requirement and supported with ISMC 75 mm MS Channel base frame, each metering compartment having glass windows of size 100mmx100mm for meter reading, sealing arrangement for all metering, earth studs, earth terminal block/strip in the out going compartment, loop earthing with 10 sq.mm PVC green wire, internal wiring between busbar and energy meter with 10.sq.mm copper conductor cable with lugs, with the following switch gears/accessories as per KSEB norms and conditions.The meter panel shall be supported in MS structure with concrete foundation as per requirement of site and as per drawing approved and issued by Engineer in charge including credit for old panel etc complete as required.				
	A) INCOMER:				
	i) 63 A MCCB FP 25 kA ,Icu=Ics=100% -1 No				
	B) BUSBAR:				

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
	Bus bar chamber with 4 strip copper bus bar of suitable length having current carrying capacity of 100 Amps - 1set				
	C)OUTGOINGS:				
	METER COMPARTMENT Space for single phase energy meter and providing Suitable size 3mm thick phenolic laminated sheet mounted with 32 amps rewireable type porcelain fuse unit (cutout)-1 No, 32 A Neutral link meter reading glass arrangement in meter compartment door with hinged door having locking arrangement,40 Amps DP Isolator for quarter - 5 set.				
	D) Cable alley				
	The cable alley of suitable size for rearranging or looping of cable/wires at top and bottom or left and right etc as required	2	Job	56170	1,12,340
18	**(Metering panel boards for Block-IV for 12 Nos. quarters)**				
	SITC of indoor Floor mounting, free standing, compartmentalised, powder coated CPRI approved cubical meter board, suitable for distribution of 1 Phase, 2 Wire, 230 volts 50 Hz AC Supply, fabricated with CRCA sheet steel not less than 2 mm thick for structure and 1.6 mm for door, having nominal front surface area of 3.0 sq.mtr and depth 300 mm (minimum), dust and vermin proof, with busbar chamber, cable alleys, detachable gland plate for cable entry at top/bottom or both as per requirement and supported with ISMC 75 mm MS Channel base frame, each metering compartment having glass windows of size 100mmx100mm for meter reading, sealing arrangement for all metering, earth studs, earth terminal block/strip in the out going compartment, loop earthing with 10 sq.mm PVC green wire, internal wiring between busbar and energy meter with 10.sq.mm copper conductor cable with lugs, with the following switch gears/accessories as per KSEB norms and conditions.The meter panel shall be supported in MS structure with concrete foundation as per requirement of site and as per drawing approved and issued by Engineer in charge including credit for old panel etc complete as required.				
	A) INCOMER:				
	i) 100 A MCCB FP 25 kA ,Icu=Ics=100% -1 No				

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
	B) BUSBAR:				
	Bus bar chamber with 4 strip copper bus bar of suitable length having current carrying capacity of 125 Amps - 1set				
	C)OUTGOINGS:				
	METER COMPARTMENT Space for single phase energy meter and providing Suitable size 3mm thick phenolic laminated sheet mounted with 32 amps rewireable type porcelain fuse unit (cutout)-1 No, 32 A Neutral link meter reading glass arrangement in meter compartment door with hinged door having locking arrangement,40 Amps DP Isolator for quarter - 12 set.				
	D) Cable alley				
	The cable alley of suitable size for rearranging or looping of cable/wires at top and bottom or left and right etc as required	1	Job	126071	1,26,071
19	**(Metering panel boards for Block-V for 16 Nos. quarters)**				
	SITC of indoor Floor mounting, free standing, compartmentalised, powder coated CPRI approved cubical meter board, suitable for distribution of 1 Phase, 2 Wire, 230 volts 50 Hz AC Supply, fabricated with CRCA sheet steel not less than 2 mm thick for structure and 1.6 mm for door, having nominal front surface area of 3.9 sq.mtr and depth 300 mm (minimum), dust and vermin proof, with busbar chamber, cable alleys, detachable gland plate for cable entry at top/bottom or both as per requirement and supported with ISMC 75 mm MS Channel base frame, each metering compartment having glass windows of size 100mmx100mm for meter reading, sealing arrangement for all metering, earth studs, earth terminal block/strip in the out going compartment, loop earthing with 10 sq.mm PVC green wire, internal wiring between busbar and energy meter with 10.sq.mm copper conductor cable with lugs, with the following switch gears/accessories as per KSEB norms and conditions.The meter panel shall be supported in MS structure with concrete foundation as per requirement of site and as per drawing approved and issued by Engineer in charge including credit for old panel etc complete as required.				

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
	A) INCOMER:				
	i) 100 A MCCB FP 25 kA ,Icu=Ics=100% -1 No				
	B) BUSBAR:				
	Bus bar chamber with 4 strip copper bus bar of suitable length having current carrying capacity of 125 Amps - 1set				
	C)OUTGOINGS:				
	METER COMPARTMENT Space for single phase energy meter and providing Suitable size 3mm thick phenolic laminated sheet mounted with 32 amps rewireable type porcelain fuse unit (cutout)-1 No, 32 A Neutral link meter reading glass arrangement in meter compartment door with hinged door having locking arrangement,40 Amps DP Isolator for quarter - 16 set.				
	D) Cable alley				
	The cable alley of suitable size for rearranging or looping of cable/wires at top and bottom or left and right etc as required	1	Job	193476	1,93,476
20	**(Metering panel boards for Block-VI & VII (two panel for each block,Total 7+8=15 Nos quartes)**				

Sl. No.	Description of items	Qty	Unit	Rate (Rs)	Amount (Rs)
	SITC of indoor Floor mounting, free standing, compartmentalised, powder coated CPRI approved cubical meter board, suitable for distribution of 1 Phase, 2 Wire, 230 volts 50 Hz AC Supply, fabricated with CRCA sheet steel not less than 2 mm thick for structure and 1.6 mm for door, having nominal front surface area of 2.10 sq.mtr and depth 300 mm (minimum), dust and vermin proof, with busbar chamber, cable alleys, detachable gland plate for cable entry at top/bottom or both as per requirement and supported with ISMC 75 mm MS Channel base frame, each metering compartment having glass windows of size 100mmx100mm for meter reading, sealing arrangement for all metering, earth studs, earth terminal block/strip in the out going compartment, loop earthing with 10 sq.mm PVC green wire, internal wiring between busbar and energy meter with 10.sq.mm copper conductor cable with lugs, with the following switch gears/accessories as per KSEB norms and conditions.The meter panel shall be supported in MS structure with concrete foundation as per requirement of site and as per drawing approved and issued by Engineer in charge including credit for old panel etc complete as required.				
	A) INCOMER:				
	i) 100 A MCCB FP 25 kA ,Icu=Ics=100% -1 No				
	B) BUSBAR:				
	Bus bar chamber with 4 strip copper bus bar of suitable length having current carrying capacity of 125 Amps - 1set				
	C)OUTGOINGS:				
	METER COMPARTMENT Space for single phase energy meter and providing Suitable size 3mm thick phenolic laminated sheet mounted with 32 amps rewireable type porcelain fuse unit (cutout)-1 No, 32 A Neutral link meter reading glass arrangement in meter compartment door with hinged door having locking arrangement,40 Amps DP Isolator for quarter - 8 set.				
	D) Cable alley				
	The cable alley of suitable size for rearranging or looping of cable/wires at top and bottom or left and right etc as required	2	Job	109844	2,19,688
				Total Rs.	**1623448**