INDEX PAGE

Name of Work	**Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.**	
Sl. No.	**Description**	**Page**
	Index	**1a**
	PART-A	**1-23**
1	Information and instructions for contractors for e-tendering	2-4
2	Receipt of Deposition of original EMD	5
3	C.P.W.D – 6 for e-Tendering	6-11
4	CPWD –7	12-13
5	Acceptance	14
6	Proforma of Schedules, General Rules & Directions	15-22
7	General requirements for the tender	23
	PART-B	**24-135**
8	Scope of Work	25-28
9	Additional Conditions	29-48
10	Special Conditions	49-60
11	Particular Specifications	61-85
12	List of machinery, tools & plants to be deployed by the contractor at site	86
13	List of Preferred Makes For Civil Works	87-91
14	Contract for Removal of defects after completion in respect of water proofing works, Aluminium Composite panel, water supply and sanitary installation & stone works	92-99
15	Form of Bank Guarantee for Earnest Money deposit/Performance Guarantee/Security Deposit/Mobilization Advance	100-101
16	From of application by the contractor for seeking rescheduling of Milestones	102
17	Schedule of Quantity (Civil)	103-135
	PART –C	**136-241**
18	Proforma of Schedules	137-141
19	List of machinery, tools & plants to be deployed by the contractor at site	142
20	Conditions for associate agency for E & M work	143
21	Proposal for associating agency for E & M works	144
22	Eligibility condition for Associate agency	145-154
23	Memorandum of understanding (M.O.U) & Willingness certificate	155-157
24	All Additional Terms & conditions	158-207
25	Approved makes of materials for E& M	208-215
26	Schedule of Quantity (Electrical)	216-241

Certified that this NIT contains pages **1 to 241** (excluding covers).

This **N.I.T. 10/EE/VD/2026-27** is approved for **Rs. 5,36,77,712/- (**Rs. Five Crore Thirty Six lakh Seventy Seven Thousand Seven Hundred Twelve) Only.

सहायक अभियंता(यो0)
वाराणसी मण्डल
के0लो0नि0वि0, वाराणसी

कार्यपालक अभियंता
वाराणसी मण्डल
के0लो0नि0वि0, वाराणसी

PART-A

C=
I=
O=

Nil AE(P) EE

के.लो.नि.वि.		CPWD

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

(Applicable for inviting open bids)

The **Executive Engineer, Varanasi, C.P.W.D., Varanasi** on behalf of President of India invites online Percentage rate bids from **approved and eligible contractors of Building & Roads Category in CPWD** for the following work(s):

S. No.	NIT No.	Name of work and location	Estimated cost put to Tender	Earnest Money	Period of Completion	Last date & time of submission of bid, EMD, e-tender processing fee and other Document as specified in the bid document	Time &date of opening of tender
1	2	3	4	5	6	7	8
1	**10/EE/VD/2026-27**	**Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.**	**Civil:-** **Rs. 4,03,20,246/-** **Electrical:-** **Rs. 1,33,57,466/-** **Total:** **Rs. 5,36,77,712/-**	**Rs 10,73,554/-**	**12 Months**	**Upto 03:00 PM on 04.08.2026**	**At 03:30 PM on 04.08.2026**

**** To be filled in by the Executive Engineer***

कार्यपालक अभियंता
वाराणसी मण्डल
के0लो0नि0वि0, वाराणसी।

C=
I=
O=
} Nil

AE(P)

EE

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. He should not have been debarred by the department on the last date for submission of bid.
2. Information and Instructions for bidders posted on website shall form part of bid document.
3. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website **https://etender.cpwd.gov.in or 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, 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.
5. The contractors not registered on the website mentioned above, are required to get registered before and. If needed they can be imparted training on online bidding process as per details available on the website.
6. The intending bidder must have valid class-III digital signature to submit the bid.
7. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
8. Contractor can upload documents in the form of **JPG** format and **PDF** format.
9. Contractor must ensure to quote rate of each item. The column meant for quoting rate in figures appears in pink color and the moment rate is entered, it turns sky blue.

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

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

C=
I= } Nil AE(P) EE
O=

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

I. Insurance Surety Bond, Demand Draft/ Account Payee Banker's Cheque / FDR/ Bank Guarantee of any commercial Bank against EMD.

II. Receipt of Deposition of Original EMD.

III. Enlistment Order of the Contractor in composite category /Building & Roads Category.

IV. GST Registration Certificate, if already obtained by the bidder. If the bidder has not obtained GST registration as applicable than he shall scan and upload following under taking along with other 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 a/c of the work executed and/or for any action taken by CPWD or GST department in this regard".**

V. Photo copy of PAN Card.

VI. ERP Training certificate in compliance with Directorate O.M. No. DG/Enlist. Rules-2023/07 dated 12.01.2024.

VII. Valid Email ID & Mobile Number on your letter Pad.

C=
I=
O= } Nil AE(P) EE

के.लो.नि.वि.		CPWD

RECEIPT OF DEPOSITION OF ORIGINAL EMD

(Receipt No. …….. / date ……)

Name of Work: **Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.**

NIT No. :- **10/EE/VD/2026-27**

1. Estimated Cost : **Rs. 5,36,77,712/-**
2. Amount of Earnest Money Deposit : **Rs 10,73,554/-**

(In favour of Executive Engineer, Allahabad Central Division, CPWD, Allahabad)

3. Last date of submission of Bid :- **04.08.2026**

---

1. Name of Contractor: ……..... #
2. Form of EMD ……..... #
3. Amount of Earnest Money Deposit ……..... #
4. Date of submission of EMD ……..…… #

……

Signature, Name and Designation of EMD
Receiving officer (EE/AE(P)/AAO) along with Officer stamp

* To be filled by EE inviting tender.
# To be filled by EMD receiving EE.

C=
I= } Nil AE(P) EE
O=

CPWD-6 FOR e-Tendering

Percentage rate bids are invited on behalf of President of the India from approved and eligible contractors of Building & Roads category of CPWD for the work of **Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.** The enlistment of the contractors should be valid on the last date of submission of bids. In case the last date of submission of bid is extended, the enlistment of contractor should be valid on the original date of submission of bids.

1.1 The work is estimated to cost: **Rs. 5,36,77,712/-** This estimate, however, is given merely as a rough guide.

2. Agreement shall be drawn with the successful bidders on prescribed Form No. **CPWD 7** 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 **12 Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.

4. The site for the work "**Subsidiary Intelligence Bureau at Jaunpur"** is available.

AND

The architectural and structural drawings shall be made available in phased manner, as per requirement of the same and as per approved programme of completion submitted by the contractor after award of work.

5 The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract 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 or withdraw it before last date and time of submission of bid as notified. No post-tender modification is allowed by the tenderers except through negotiations, if required. In case, any tenderer does so, the tender will be rejected and the tenderer will be debarred for future tendering in CPWD for two years by the concerned enlisting authority (in case of CPWD enlisted contractor) and by the concerned CE/SE (in case of non-enlisted contractor).

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

8. When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.

C=
I=
O= } Nil AE(P) EE

9. Earnest Money in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee including e-Bank Guarantee (for balance amount as prescribed) from any of the Commercial Banks (drawn in favour of **Executive Engineer, Allahabad Central Division, CPWD, Allahabad**) 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 (EM) is acceptable in the form of bank guarantee also. In such case, **minimum** 50% of earnest money or Rs. 20 lac, whichever is less, shall have to be deposited in shape prescribed above, and balance **may be deposited** in shape of Bank Guarantee of any commercial bank **having validity for six months or more from the last date of receipt of bids** which is to be scanned and uploaded by the intending bidders.

Copy of Enlistment Order and certificate of work experience and other documents as specified in the bid document shall be scanned and uploaded to the e-Tendering website within the period of bid submission. Further, certified copy of all the scanned and uploaded documents as specified in bid document shall have to be submitted by the lowest bidder only within a week physically in the office of tender opening authority.

Online bid documents submitted by intending bidders shall be opened only of those bidders, whose documents scanned and uploaded are found in order.

The bid submitted shall be opened at 03:30 PM on **04.08.2026**

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

a. The bidder is found ineligible.
b. The bidder does not upload all the documents (including GST registration) as stipulated in the bid document.
c. If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the bidder in the office of bid opening authority.
d. 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.

11. The contractor whose bid is accepted will be required to furnish performance guarantee at specified percentage of the tendered amount as mentioned in schedule E and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the

C= I= O=	Nil	AE(P)	EE

said performance guarantee within the period as indicated in Schedule 'F', including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee. The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/ registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board including Provident Fund Code No. If applicable and also ensure the compliance of aforesaid provisions by the subcontractors, if any engaged by the contractor for the said work within the period specifiedin Schedule F.

12. Description of the work is as follows: **Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.** Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining cost of all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work at his own 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.

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

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

15. 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.

16. 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

C= I= O=	Nil	AE(P)	EE

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.

17. 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.

18. **The bids for the work shall remain open for acceptance for a period of 30 (thirty)** days from the date of opening of bids in case of single bid system ~~and 75 (seventy five) days from the date of opening of technical bids in case bids are invited in 2 or 3 bid system~~. Further

(i) If any tenderer withdraws his tender within 7 days after last date and time (24 hours basis) of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 50% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

(ii) If any tenderer withdraws his tender after expiry of 7 days after last date & time (24 hours basis) of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

(iii) Withdrawal of the tender, by the tenderer, shall only be made through e-tender portal. Any other method i.e. through letter/ e-mail etc. shall not be considered.

(iv) Further, if the tenderer after becoming successful & issuance of letter of acceptance fails to deposit the prescribed PG in prescribed period and extension period, if any as mentioned in Schedule F, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of the earnest money absolutely.

(v) In case of forfeiture of earnest money as prescribed in para (i), (ii) & (iv) 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

C= I= O=	Nil	AE(P)	EE

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** or other Standard C.P.W.D. Form as applicable.

20. **For Composite Bids.**

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

21.1.2 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 **(CPWD GCC Construction Works 2023** as modified and corrected upto Previous days of **last date of submission of tenders.**
Part B:-General/ specific conditions, specifications and schedule of quantities applicable to major component of the work.
Part C:-Schedule A to F for minor component of the work. (SE/EE in charge of major component shall also be competent authority under clause 2 and clause 5 as mentioned in schedule A to F for major components), General/specific conditions, specifications and schedule of quantities applicable to minor component(s) of the work.

21.1.3 The bidders must associate himself, with agencies of the appropriate class eligible to bid for each of the minor component individually.

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

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

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

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

C= I= O=	Nil	AE(P)	EE

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

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

21.1.10 The main contractor has to enter into agreement with contractor(s) associated by him for execution of minor component(s). Copy of such agreement shall be submitted to EE/DDH in charge of each minor 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 agreement with the new contractor associated by him.

21.1.11 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.

21.1.12A. The composite work shall be treated as complete when all the components of the work are complete. The completion certificate of the composite work shall be recorded by Engineer-in-charge of major component after record of completion certificate of all other components.

21.1.12B. Final bill of whole work shall be finalized and paid by the EE of major component. Engineer(s) in charge of minor component(s) will prepare and pass the final bill for their component of work and pass on the same to the EE of major component for including in the final bill for composite contract.

22. The intending bidders are required to update their profile in CPWD e- tender portal and to upload their bids well in advance of last date of submission of tender. Any issue related to updating profile/uploading tender can be resolved through the concerned Executive Engineer/ Assistant Engineer **(Phone no 0542-2982333, e- mail Id eecvaranasi0@gmail.com)** or ERP helpline no. 18001803286 or e-mail ld cpwd.support@techmahindra.com. The e- tendering bidders are also advised not to wait to raise any issues till the last date of submission of bid in their own interest.

**** To be filled in by the Executive Engineer***

C=
I= } Nil AE(P) EE
O=

CPWD-7

GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT

PERCENTAGE RATE TENDER & CONTRACT FOR WORKS

(A) Tender for **Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.**

(i) To be uploaded by **03:00 PM** hours on **04.08.2026** at **www.cpwd.gov.in**
(ii) To be opened in presence of tenderers who may be present at **03:30 PM** hours on **04.08.2026** in the office of **Executive Engineer, Varanasi, CPWD, Varanasi.**

TENDER

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

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

We agree to keep the tender open for thirty/~~forty five/ sixty/ ninety~~(30/~~45/60/90~~) days from the due date of its opening and not to make any modification in its terms and conditions.

I/We have deposited EMD for the prescribed amount in the office of concerned Executive Engineer as per the bid document or Division office of any Executive Engineer of CPWD.**(Strike out as the case may be)**.

A copy of earnest money deposit receipt of prescribed amount deposited in the form of **Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee** (as prescribed) issued by **a Commercial Bank**, is scanned and uploaded **(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.

C=
I= } Nil AE(P) EE
O=

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 — Signature of Contractor

Witness: — Postal Address

Address:

Occupation:

**** To be filled in by the Executive Engineer.***

C=
I=
O= } Nil — AE(P) — EE

ACCEPTANCE

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

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

(a)

(b)

(c)

For & on behalf of the President of India

Signature ……..

Dated: Designation …….

C=
I=
O= } Nil AE(P) EE

PROFORMA OF SCHEDULES

(Separate Performa for Civil, Elect. & Hort. Works in case of Composite Tenders)

SCHEDULE 'A'

Schedule of quantities: (Page No. 103-135) Civil

SCHEDULE 'D'

Extra schedule for specific requirements/document for the work, if any. **As attached in tender form**

SCHEDULE 'E'

Reference to General Conditions of contract (CPWD GCC EPC Projects 2022/GCC Maintenance Works 2023/GCC Construction Works 2023	Applicable GCC is **CPWD GCC Construction Works 2023** as modified and corrected upto previous days of last date of submission of tenders. (Whether or not all the amendments in the form of latest circular issued are duly signed and incorporated in this tender or contract document)

Name of Work:	**Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.**	
Estimated cost of the work:	**Civil Work**	**Rs. 4,03,20,246/-**
	Electrical Work	**Rs. 1,33,57,466/-**
	Total	**Rs. 5,36,77,712/-**
Earnest money	**Rs. 10,73,554/-** (To be returned after receiving performance guarantee)	
Performance Guarantee	(a) 5% of the tendered value or Estimate Cost Put to Tender (ECPT) (whichever is higher) (b) Where the tender amount is less than eighty percent (80%) of the Estimate 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.	
Security Deposit	2.5% of the tendered value of the work	

C=
I=
O= } Nil AE(P) EE

SCHEDULE 'F'
GENERAL RULES & DIRECTIONS:

	Officer inviting tender	**Executive Engineer, Varanasi, CPWD, Varanasi.**
	Maximum percentage of quantity of items of work to be executed beyond which rates are to be determined in accordance with Clause 12.2.& 12.3	See below

Definitions:

2(vi)	**Engineer-in-Charge** For Civil items of work	**Executive Engineer, Varanasi, CPWD, Varanasi or his successor thereof**
	For Electrical items of work	**Executive Engineer (E), Allahabad, CPWD, Prayagraj or his successor thereof.**
2(viii)	Accepting Authority	**Superintending Engineer, Allahabad, CPWD, Prayagraj.**
2(x)	Percentage on cost of materials and labour to cover all overheads and profits	15%
2(x)(b)	**Standard Schedule of Rates:** Civil Items of Work:	**CPWD, DSR-2023**
	Electrical Items of Work:	**As mentioned in electrical part.**
2(xi)	Department:	Central Public Works Department
9(ii)	Standard CPWD contract Form:	Applicable GCC is **CPWD GCC Construction Works 2023** as modified and corrected upto previous days of last date of submission of tenders. (Whether or not all the amendments in the form of latest circular issued are duly signed and incorporated in this tender or contract document)

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	**07 Days**
	ii)	Maximum allowable extension **with late fee @ 0.1% per day of Performance Guarantee amount beyond the period as provided in (i) above**	**03 Days**

C= I= O=	Nil	AE(P)	EE

Clause 2	Authority for fixing Compensation under Clause 2	**Superintending Engineer, Allahabad, CPWD, Prayagraj Or successor thereof**
Clause 5		Clause 5
Number of days from the date of issue of letter of acceptance for reckoning date of start.		**10 Days**

Schedule of Mile Stone

S. No	Description of mile stone	Time allowed from date of start (in days/months.)	Amount to be with-held in case of non-achievement of milestone.
1.	Achieve 25% of the accepted tendered value.	03 months	1% of accepted tendered amount.
2.	Achieve 50% of the accepted tendered value.	06 months	1% of accepted tendered amount.
3.	Achieve 75% of the accepted tendered value.	09 months	1% of accepted tendered amount.
4.	**Complete Work.**	**12 Months**	**1% of accepted tendered amount.**

Time allowed for execution of work **12 Months**

Authority to decide

(i) Authority to convey the decision of shifting of milestone and extension of time	Engineer-in-Charge of major component of work or successor thereof
(ii) Authority to decide rescheduling of milestone and extension of time	Superintending Engineer, Allahabad, CPWD, Prayagraj or his successor thereof
(iii) Shifting of date of start in case of delay in handing over of site	Superintending Engineer, Allahabad, CPWD, Prayagraj or his successor thereof

C= I= O=	Nil	AE(P)	EE

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	At the start of work
Part B	Portions with encumbrances (Land under cultivation)	-	-
Part C	Portions dependent on work of other agencies	-	-

Clause 6

Computerized Measurement Book: EMB

Mode of Measurement: EMB

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. 33.00 Lacs**
Clause 7A	Whether Clause 7A shall be applicable	**Yes**
Clause 8	Competent Authorities to inspect and issue completion certificate	**Executive Engineer, Varanasi, CPWD, Varanasi for major component and over all completion.**
Clause 10A	List of testing equipment to be provided by the contractor at site lab.	**Refer page 43-45**
Clause 10 B (ii)	Whether clause 10-B (ii) shall be applicable.	**No**
Clause 10 C	Component of labour expressed as percentage of value of work	**25%**
Clause 10 CC		**Not Applicable**

Clause 11 **Specification to be followed for execution of work**:

CPWD Specifications 2019 Vol. 1 and Vol. 2 with correction slips **upto previous days of last date of submission of tenders.** (Hereinafter called CPWD specifications also)

(i)	Building information model (BIM) is applicable and BIM professional to be deployed by contractor.	**No**

C=
I=
O= } Nil AE(P) EE

Clause 12

12.2 (c)	Deviation limit beyond which clause 12.2 (c) shall apply for building work.	**100%**
	i) Deviation limit beyond which clause 12.2 (c) shall apply for foundation work **(except items mentioned in earth work subhead in DSR and related items)**	**100%**
	ii) Deviation limit for items mentioned in earth work subhead of DSR and related items	**100%**

Clause 16	**Competent Authority for Deciding reduced rates:**	**Superintending Engineer, Allahabad, CPWD, Prayagraj Or successor thereof.**
Clause 18	List of mandatory machinery, tools & plants to be deployed by the contractor at site.	**As per Page No. 86**
Clause 19C	Authority to decide penalty for each default.	**Engineer-in-charge.**
Clause 19D	Authority to decide penalty for each default.	**Engineer-in-charge.**
Clause 19G	Authority to decide penalty for each default.	**Engineer-in-charge.**
Clause 19K	Authority to decide penalty for each default.	**Engineer-in-charge.**

Clause 25

(i)	Conciliator	ADG (Lucknow) or successor thereof
(ii)	Arbitrator Appointing Authority	Superintending Engineer, Allahabad, CPWD, Prayagraj or successor thereof
(iii)	Place (Seat) of Arbitration	Varanasi (U.P.)

C=
I= } Nil AE(P) EE
O=

Clause 32 Requirement of Technical Representative(s) and Recovery Rate

Sl. No. cost of work (Rs. in Crore)	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 36(i)	
	Qualification	Number (of Major + Minor Component)			Figures	Words
~~More than 50 to 100~~	~~Graduate Engineer~~	~~1~~	~~20 (and having experience of one similar nature of work)~~	~~Project manager~~	~~Rs. 60,000/- per month~~	~~Rs. Sixty Thousand per month~~
	~~Graduate Engineer~~	~~1~~	~~12 (and having experience of one similar nature of work)~~	~~Deputy Project Manager~~	~~Rs. 40,000/- per month~~	~~Rs. Forty Thousand per month~~
	~~Graduate Engineer Or Diploma Engineer~~	~~1+1~~	~~5 Or 10 respectively~~	~~Project / Site Manager~~	~~Rs. 25,000/- per month~~	~~Rs. Twenty Five Thousand per month~~
	~~Graduate Engineer~~	~~1+1~~	~~8~~	~~Quality Engineer~~	~~Rs. 25,000/- per month~~	~~Rs. Twenty Five Thousand per month~~
	~~Diploma Engineer~~	~~1~~	~~8~~	~~Surveyor~~	~~Rs. 15,000/- per month~~	~~Rs. Fifteen Thousand per month~~
	~~Graduate Engineer~~	~~1+1~~	~~6~~	~~Project Planning/ Billing Engineer~~	~~Rs. 20,000/- per month~~	~~Rs. Twenty Thousand per month~~
~~More than 20 to 50~~	~~Graduate Engineer~~	~~1~~	~~20 (and having experience of one similar nature of work)~~	~~Project Engineer~~	~~Rs. 60,000/- per month~~	~~Rs. Sixty Thousand per month~~
	~~Graduate Engineer~~	~~1~~	~~12 (and having experience of one similar nature of work)~~	~~Deputy Project Manager~~	~~Rs. 40,000/- per month~~	~~Rs. Forty Thousand per month~~
	~~Graduate Engineer Or Diploma Engineer~~	~~1+1~~	~~5 Or 10 respectively~~	~~Project / Site Manager~~	~~Rs. 25,000/- per month~~	~~Rs. Twenty Five Thousand per month~~
	~~Graduate Engineer Or Diploma Engineer~~	~~1+1~~	~~2 Or 5 respectively~~	~~Project Planning/ Quality/ Billing Engineer~~	~~Rs. 15,000/- per month~~	~~Rs. Fifteen Thousand per month~~

C=
I= } Nil AE(P) EE
O=

~~More than 10 to 20~~	~~Graduate Engineer~~	~~1~~	~~10 (and having experience of one similar nature of work)~~	~~Project Manager~~	~~Rs. 30,000/- per month~~	~~Rs. Thirty Thousand per month~~
	~~Graduate Engineer Or Diploma Engineer~~	~~1~~	~~5 Or 10 respectively~~	~~Project / Site Manager~~	~~Rs. 25,000/- per month~~	~~Rs. Twenty Five Thousand per month~~
	~~Graduate Engineer Or Diploma Engineer~~	~~1+1~~	~~2 Or 5 respectively~~	~~Project Planning/ Quality / billing Engineer~~	~~Rs. 15,000/- per month~~	~~Rs. Fifteen Thousand per month~~
More than 5 to 10	Graduate Engineer	1	5 (and having experience of one similar nature of work)	Project Manager	Rs. 25,000/- per month	Rs. Twenty Five Thousand per month
	Graduate Engineer Or Diploma Engineer	1+1	2 Or 5 respectively	Project Planning/ Quality / Site/ billing Engineer	Rs. 15,000/- per month per person	Rs. Fifteen Thousand per month per person
~~More than 1.5 to 5~~	~~Graduate Engineer Or Diploma Engineer~~	~~1+1~~	~~2 Or 5 respectively~~	~~Project Manager cum Planning/ Quality / Site/ billing Engineer~~	~~Rs. 15,000/- per month~~	~~Rs. Fifteen Thousand per month~~
~~More than 15 lacs to 1.5 crore~~	~~Graduate Engineer Or Diploma Engineer~~	~~1 of major component~~	~~2 Or 5 respectively~~	~~Project Manager cum Planning/ Quality/Site/ billing Engineer~~	~~Rs. 25,000/- per month~~	~~Rs. Fifteen Thousand per month~~

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

Clause 38

i) a) Schedule/ statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates 2021 printed by C.P.W.D.

ii) **Variations permissible on theoretical quantities**

C= I= O=	Nil	AE(P)	EE

a)	Cement for works with estimated cost put to tender not more than Rs. 25 lakhs.	**3% plus/minus**
	For works with estimated cost put to Tender is more than Rs. 25 lakhs	**2% plus/minus**
b)	Bitumen all works	**2.5% plus only & nil on minus side.**
c)	Steel reinforcement and structural steel Sections for diameter, section and category.	**2% plus/minus.**
d)	All other materials	**Nil**

C=
I= } Nil AE(P) EE
O=

GENERAL REQUIREMENTS FOR THE TENDER

Name of Work: **Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.**

1 The tenderer is advised to read and examine the tender documents for the work and the set of drawings available with Engineer-in-charge. He should inspect and examine the site and its surroundings by himself before submitting his tender.

2 Separate schedule of quantity is included in this tender for civil and electrical items of work. If the tenderer wants to offer any unconditional rebates on their rates, the same should also be offered in the respective components of civil and electrical schedule separately. The contractor shall quote the percentage rates in figures and words accurately so that there is no discrepancy in rates written in figures and words.

3 Time allowed for the execution of work is **12 Months.**

4 The contractor(s) shall submit a detailed program of execution in accordance with the master programme/ milestone within ten days from the date of issue of award letter.

5 Quality of the project is of utmost importance. This shall be adhered to in accordance with the provisions of CPWD specifications and guidelines given in the relevant paras.

a. The contractor (s) shall make his own arrangements for electricity and water required for the execution of work.

b. **Cement, steel reinforcement, all the material required shall be arranged by the contractor himself.**

c. Contractor has to deploy required Plant and machinery on the project. **Minimum number of plant and machinery to be deployed by him is indicated at Page No. 86.** In case the contractor fails to deploy the plant and machinery whenever required and as per the direction of the Engineer-in-charge, he (Engineer-in-charge) shall be at a liberty to get the same deployed at the risk and cost of the contractor.

d. The contractor shall submit the running bills in the shape of the computerized MB in pages of A-4 size as per the standard format of department and shall act as per modified clause 6 of CPWD-7.

e. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued there under from time to time.

C= I= O=	Nil	AE(P)	EE

PART-B

C= I= O=	Nil	AE(P)	EE

SCOPE OF WORK

The broad scope of work shall include but not limited to the following operations/ activies / items related to the works:-

Civil Work

Structure	
	1) Super structure RCC framed structure with M-30 Concrete. 2) Foundation with Raft footing. 3) Plinth protection work as per agreement item. 4) Sunken portion-European toilet 50mm, Indian toilet 300 mm 5) Grade slab of thickness 100 mm with nominal mix 1:2:4 having nominal reinforcement of 10 mm @250 c/c both ways single layer placed at the top. The slab to be placed over 100 mm sand and 75 mm PCC 1:5:10.
Brick work	
	1) Burnt clay bricks for brickwork in-fill walls. 2) Burnt clay bricks for wall below plinth, toilet area and parapet.
Plaster	
	1) 1:6 cement plaster 12 & 15 mm thick on internal and external walls.
Doors & Frame	
Main Door	1) WPC Chowkhat of size 65x125mm double rebate 2) 35 mm thick commercial flush door shutter 3) 35mm thick teak wood shutter with SS 304 wire gauge
Balcony doors	1) WPC Chowkhat of size 65x125mm double rebate 2) 35 mm thick commercial flush door shutter 3) 35mm thick teak wood shutter with SS 304 wire gauge OR 3 track UPVC doors with 5mm thick glazing (as per drawings)
Internal Doors	1) WPC door frame size 65x100mm with single rebate. 2) 35 mm thick commercial flush door shutter
Toilet Doors	1) WPC door frame of size 45 x 70 mm. 2) 30 mm thick decorative WPC door shutter
Mumty Doors, Stair Entry Door	1) MS T-iron door shutter 2) MS Sheet Door
Door Accessories	
Main Door	SS-304 250 mm L-Drop, 250 mm SS tower bolt, 150 mm SS tower bolt, 2 Nos. 150 mm SS handles, magic eye, Aluminium

	twin floor door stopper
Wire mesh door	SS-304 250 mm L-Drop, 250 mm tower bolt, 150 mm tower bolt, 2 Nos. 150 mm SS handles, Aluminium twin floor door stopper
Internal Door	SS-304 250 mm L-Drop, 250 mm tower bolt, 150 mm tower bolt, 2 Nos. 150 mm SS handles, Aluminium twin floor door stopper
Toilet Door	Al. 250 mm L-Drop, Al. 250 mm tower bolt, Al. 150 mm tower bolt, 2 Nos. 150 mm Al. handles.
Flooring	
Circulation Area	18 mm thick granite flooring with matching 100 mm high skirting.
Staircase	18 mm thick granite with light shade on tread and dark shade on riser. Skirting shall be parallel to the waist slab.
Rooms	600 x 600 mm double charged vitrified tiles with matching 100 mm high skirting
Balcony	600 x 600 mm glazed vitrified tiles matt finish with matching 100 mm high skirting
Kitchen	600 x 600 mm glazed vitrified tiles matt finish with matching 100 mm high skirting
Toilet	300 x 300 mm matt finished/ antiskid ceramic tiles
Wall Cladding	
Kitchen	300 x 450 mm ceramic glazed wall tiles above the kitchen slab up to 2100 mm height
Toilet	300 x 450 mm Ceramic glazed wall tiles upto 2100 mm height
Stone Work	
Window Sill	18 mm thick granite other than black with edge moulding and polish
Kitchen Slab	18 mm thick black granite with edge moulding and polish
False Ceiling	
Toilet	GI metal false ceiling tiles.
Railing	
Staircase	SS-304 railing
Balcony	SS-304 railing
Windows	
Rooms	1) Three track sliding type (mainly) UPVC windows with SS 304 wire mesh shutter having shutter with 5 mm thick glazing. 2) MS grill fixed to windows.
Staircase lobby	1) Two track UPVC windows and other with SS 304 wire mesh. 2) MS grill fixed to windows.
Toilet	UPVC fixed ventilator.
Cupboard	
Rooms	1) Shelves with 25 mm thick prelaminated WPC board. 2) Shutters with 25 mm thick prelaminated WPC board

C=
I=
O= } Nil AE(P) EE

	3) Frame with WPC size 70 x 45 mm. 4) Backing with 6mm thick prelaminated WPC board 5) Box sides with 18mm thick prelaminated WPC board
Cupboard Accessories	
	Magnetic catcher, 200 mm decorative handle, 25 mm hanger rod, SS hasp & staple.
Kitchen Cabinet	
Lower Cabinet	1) Partition and shelves with 18 mm thick prelaminated WPC board 2) Shutter with 18 mm thick one side decorative marine ply as per IS 710.
Wall cabinet	1) Partition and shelves with 18 mm thick prelaminated WPC board 2) Shutter with 18 mm thick one side decorative marine ply as per IS 710.
Kitchen cabinet accessories	
	150 mm recessed handles and hinges
Kitchen basket	1) SS 304 wire baskets in qtrs. with SS 304 telescopic slider.
Water Proofing	
Terrace	Integral brick coba treatment
Toilets	Two-layer water proofing
UG Tank/lift pit	Rough Kota water proofing
Painting & Finishing	
False Ceiling Area	Lime wash on concrete roof surface covered by false ceiling.
Internal walls	1) White cement-based putty on all internal wall/roof surface. 2) Cement primer. 3) Acrylic emulsion paint on wall putty finished interior surfaces.
External walls	1) White cement based putty external exposed wall. 2) Exterior primer. 3) Premium acrylic smooth exterior paint with silicon additives on all plastered exterior wall face.
Commercial Flush Door shutters	1) Wood primer and Synthetic enamel paint for Type II quarters. 2) 1 mm thick laminate for type III quarter.
Mumty door, M.S structure	Synthetic enamel paint,
Plumbing & Sanitary pipeline work.	
	1) Water supply lines, concealed with CPVC pipes and exposed on walls/external with GI pipes & accessories. 2) Waste water & sewage pipe lines with hubless CI pipes & accessories up to 1st man hole 3) UPVC rain water pipes with accessories.
Ceramic Fittings	

C=
I=
O= } Nil AE(P) EE

Toilet	Ceramic fixture of approved make viz flat-back wash basins, Orissa pan/ EWC with dual flushing cistern.
CP Fitting & Fixtures	
Toilet	1) CP brass basin mixture single lever quarter turn type 2) CP brass quarter turn type fittings of approved make for angle valve, bib cock etc. 3) CP Brass wall mixture with provision for overhead shower with quarter turn fixtures 4) CP brass Overhead Shower dia 100mm with arm 5) CP brass health faucets for EWC. 6) CP Brass Towel rail 7) Small Granite slab for soap keeping. 8) 600 x450 mm mirror
Kitchen	1) SS-304 Kitchen sink with drain board 2) Movable Goose neck CP brass sink mixer 3) Fresh water CP brass bib cock
Utility Balcony	1) CP Brass Bib cock & washing machine tap
Miscellaneous	
	1) Curtain rod with 25 mm dia SS-304 pipe. 2) 25000 ltr. PVC tank including fire tank capacity 10000 ltr. 3) 300x300 mm paver tiles in stilt area.

Development work (Civil)

1. Internal path with 150 mm PCC 1:5:10 & 150 mm Vacuum dewatered M30 Grade concrete 150mm thick.
2. Installation of 2 Nos. Bore well (one for running and another standby).
3. Rain water harvesting system with underground RCC 250 mm dia NP2 pipes & Recharge pit.

Electrical work:-

1. Internal Electrical copper (FRLS/HFFR) wiring.
2. MCBs & DBs.
3. Earthing & lightning arrestor
4. Energy saving LED's fittings, Street light with poles and BLDC fans.
5. Solar PV Power Generation
6. Electric vehicle charger
7. Networking system
8. 10 KVA UPS System
9. Electrical Panel & Cable
10. EPBAX/IPBAX System
11. CCTV System
12. 62.5 KVA DG Set
13. 100 KVA Transformer
14. Lift (G+3)
15. Submersible pump
16. Split ACs
17. Fire Fighting & Fire Alarm System

C=
I=
O= } Nil AE(P) EE

ADDITIONAL CONDITIONS

1. Except for the items, for which Particular Specifications are given or where it is specifically mentioned otherwise in the description of the items, the work shall generally be carried out in accordance with the "CPWD Specifications - 2019 (Vol. I & II)for civil works with up to date correction slips and CPWD Specification for Horticulture works with up to date correction slips (hereinafter to be collectively referred to as 'CPWD Specifications'). Wherever CPWD Specifications are silent, the latest BIS Codes/Specifications, National Building Code 2016, MoRTH specification or any other specification shall be followed.

2. The order of preference in case of any discrepancy between SOQ, the specification and/or drawings etc. shall be followed as:

   (i) Nomenclature of items as per Schedule of Quantities

   (ii) Additional/ Special Conditions and Particular Specifications as provided forming part of tender document.

   (iii) CPWD Specifications with up to date Correction slips

   (iv) Architectural/Structural drawings

   (v) Indian Standard Specifications of BIS

   (vi) National Building Code - 2016

   (vii) Manufacturers specifications.

   (viii) Sound Engineering Practices

   (ix) Decision of Engineer-in-charge.

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

3. The proposed building work is a prestigious project and quality of work is of paramount importance. Contractor shall have to engage well experienced skilled labour and deploy modern T&P and other equipment to execute the work. Many items like stone masonry & stone cladding work, stone flooring, flooring work, wood work, precast RCC coffers, polysulphide/ silicone sealant & other specialized works will specifically require engagement of skilled workers having experience particularly in execution of such items.

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

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

C=
I=
O= } Nil AE(P) EE

6. The contractor(s) shall study the soil investigation report for the site, available in the office of the Engineer-in-charge and satisfy himself about complete characteristics of soil and other parameters at site. However, no claim on the alleged inadequacy or incorrectness of the soil data supplied by the department shall be entertained.

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

8. The building work shall be carried out in the manner complying in all respects with the requirements of the relevant bylaws and regulations 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.

9. The contractor(s) shall inform/issue notices to the Municipality, police and other authorities that may be required as per law and obtain all requisite permission/ licenses for temporary obstructions, enclosures etc. Contractor(s) shall pay all fee, taxes and charges which may be leviable on account of these operations in executing the contract. He shall make good any damage to the property whether public or private and shall supply and maintain lights either for illumination or for cautioning the public at night.

10. The contractor shall fully comply with all legal orders and directions of the Public or local authorities or municipality and adhere by their rules and regulations and pay all fees and charges for which he may be liable in this regard. Nothing extra shall be paid/reimbursed for the same.

11. For construction works which are likely to generate malba / rubbish, the contractor shall reuse it at site as directed by the Engineer-in-charge or hand over to recycling agents or dispose of at his own cost to the notified/specified Municipal dumping ground. No deduction on this account shall be made from the agency as well as no extra payment will be made to agency if it is disposed at pre-defined location within the campus / Municipal dumping ground.

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

13. Utmost care shall be taken to keep the noise level to the barest minimum so that no disturbance as far as possible is caused to the occupants / users of building/adjacent properties.

C=
I=
O= } Nil AE(P) EE

14. The works shall be carried out in accordance with the Architectural drawings and structural drawings, to be issued from time to time by the Engineer-in-Charge. Before commencement of any item of work, the contractor shall correlate all the relevant architectural and structural drawings issued for the work and satisfy himself that the information available thereof is complete and unambiguous. The discrepancy, if any shall be brought to the notice of the Engineer-in-Charge before execution of the work. **In general, 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 item, the former shall prevail unless otherwise given in writing by Engineer-in-charge.** The contractor alone shall be responsible for any loss or damage executing by the commencement of work on the basis of any erroneous and or incomplete information.

15. The Architectural drawings given in the tender other than those indicated in nomenclature of items are only indicative of the nature of the work and materials/fixings involved unless and otherwise specifically mentioned. However, the work shall be executed in accordance with the drawings duly approved by the Engineer-in-Charge.

16. Other agencies **carrying out works related with the project such as** sub-station / generating sets, air-conditioning, lifts, etc. **may also simultaneously executed their work** 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 supplied free of cost by the department unless otherwise specifically mentioned) and the contractor shall fix the same at time of casting of concrete, stone work and brick work, if required, and nothing extra shall be payable on this account.

17. The contractor shall conduct 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 others.

18. Some restrictions may be imposed by the security agencies /client on the working and on movement of labour, materials etc in the campus/site and may require to issue identity cards to all persons authorized by contractor to do work / visit the work site. The contractor shall be bound to follow all such restrictions / instructions and no claim whatsoever shall on this account will be entertained. The loss of time on this account, if any, shall have to be made up by generating additional resources etc. at no extra cost.

19. The rates quoted by the contractor are deemed to be inclusive of site clearance, setting out work, profile, establishment of reference bench mark(s), spot levels, survey with total station, construction of all safety and protection devices, compulsory use of helmet, safety harness and safety shoes, and other appropriate safety gadgets by workers, imparting continuous training for all the workers, providing and installation of safety signages, barriers, earth

C= I= O=	Nil	AE(P)	EE

embankments, preparatory works, all testing of materials, working during monsoon, working at all depths, height and locations etc. unless specified in the schedule of quantities.

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

21. Contractor shall make all necessary arrangements for protecting works already executed from rain, snowfall, flood or any other natural calamity, vandalism, whatsoever, during the execution of the work and nothing extra shall be payable on this account. Further, no claim financially or otherwise shall be entertained and no payment shall be made for any damage caused by any such aforementioned reasons occurred during the execution of the work. The contractor shall be fully responsible for any damage to the govt. property and work for which the 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.

22. The contractor shall deploy resources e.g. manpower, labour, T&P, Plant & Equipment etc. as per actual requirement of work. No damages/compensation shall be payable on account of idle manpower, labour, T&P, Plant and Equipment and loss of profit etc. for whatsoever reason.

23. The rates for all items of work shall, unless clearly specified otherwise, include cost of all labour, material, tools and plants and other inputs involved in the execution of the item.

24. The contractor (s) shall quote all-inclusive rates against the items in the schedule of quantities and nothing extra shall be payable for any of the conditions and specifications mentioned. In the tender documents unless specifically specified otherwise.

25. Unless otherwise specified in the schedule of quantities the rates for all items shall be considered as inclusive of pumping/baling out water, if necessary, for which no extra payment shall be made. Those conditions shall be considered to include water from any source such as inflow of flood, surface and sub-soil water etc. and shall apply to the execution in any season.

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

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

28. The foundation trenches shall be kept free from water while works below ground level are in progress.

29. No foreign exchange shall be made available by the Department for importing (purchase) of equipment, plants, machinery, materials of any kind or any other items required to be carried

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

30. All ancillary and incidental facilities required for execution of work, onsite and offsite, like labour camp, stores, fabrication yard, offices for Contractor, watch and ward, temporary ramp required to be made for working at the basement level, temporary structure for plants and machineries, temporary barricading or fencing around the working sites, 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, 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 & other storage, fabrication yard, site laboratory, water tank etc.

31. For completing the work in time, the Contractor might be required to work in two or more shifts (including night shifts). Normally contractors shall not be allowed to execute the RCC, electrical and finishing work at night. Work at night shall, however, be allowed if the site conditions/circumstances so demand. 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.

32. The contractor shall maintain in perfect condition, all portions executed till completion of the entire work allotted to him. Where however phased delivery of work is contemplated these provisions shall apply separately to each phase.

33. 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.

34. The contractor(s) 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, services and compound walls are to be constructed. The stacking shall take place as per stacking plan however, if any change is required, the same shall be done with the approval of Engineer-in-Charge. Double handling of materials or excavated earth, if required, at any stage of the work shall have to be done by the contractor at his own cost.

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

C=
I=
O= } Nil AE(P) EE

36. The terms machine batched, machine mixed and machine vibrated concrete used elsewhere in agreement shall mean the concrete produced in concrete batching and mixing plant and if necessary transported by transit concrete mixers, placed in position by the concrete pumps, tower crane and vibrated by surface vibrator /needle vibrator / plate vibrator, as the case may be to achieve required strength and durability.

37. The cost of flooring is inclusive of providing sunken flooring in bath-rooms, kitchen, etc. and nothing extra on this account shall be payable.

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

39. No chase cutting/dismantling of plaster/RCC/CC shall be allowed, so contractor has to execute the electrical work accordingly. The work should be planned in a systematic manner so that chase cuttings in the walls, ceilings and floors are minimized. Wherever absolutely essential, the chase shall be cut using chase cutting machines. Chases will not be allowed to be cut using hammer / chisel. The electrical boxes should be fixed in walls simultaneously while raising the brick work. The contractor shall ensure proper coordination of various disciplines viz. sanitary & water supply, electrical, fire-fighting and any other services.

40. The work of water supply, internal sanitary installations and drainage etc. shall be carried out as per the bylaws of the Municipal Corporation or any other local body and the contractor shall produce necessary completion certificates from such authority after completion of work.

41. In case of local Municipal regulations / restrictions by client /non-availability space at site, if huts for labour are not allowed to be erected at the site of work, the contractor shall be required to provide such accommodation at suitable place at his own cost and nothing extra shall be paid on this account.

42. Any cement slurry added over base surface for continuation of concerting for better bond is deemed to have been built in the items and nothing extra shall be payable and no extra cement considered in consumption on this account.

43. Existing drains, pipes, cables, over-head wires, sewer lines, water lines and similar service encountered in the course of the execution of work shall be protected against the damage by the contractor at his own expense. In case the same are to be removed and diverted. The same shall be payable to the contractor. The contractor shall work out the cost and the same shall be approved by Engineer-in-Charge. The contractor shall not store materials or otherwise occupy any part of the site in a manner likely to hinder the operation of such services.

44. The contractor shall be responsible for the watch and ward / guard of the buildings safety, 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 department. No extra payment shall be made on this account.

C=
I=
O= } Nil AE(P) EE

45. The contractor shall make his own arrangements for obtaining electric connections including DG sets, if required, and make necessary payments directly to the department concerned. Nothing extra, whatsoever, shall be paid on this account and neither any extra time for delay in the said operations, whatsoever, shall be admissible on this account.

46. 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 & electric supply shall be made by the Contractor for 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.

47. The rate quoted by the contractor / agency shall be inclusive of mobilization to site all necessary machineries and equipment's, furnishing, handling, storing, installation including placing, cutting holes, splicing, driving, re-driving, bailing out water, pulling out and removal of the temporary earth retaining structure / strutting etc. from site and other machineries, equipment's, instrumentations etc. men ,materials etc. , other incidental to works, for execution of work, with all safety measures as required for the execution of construction work for safety of surrounding existing buildings, structures, services, parked / moving vehicles, equipment's and machines etc. as per direction of Engineer-in-charge.

48. 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.

49. SIGN BOARDS: The Contractor shall provide, erect and maintain till completion of work, a display board of size and shape as per directions of Engineer in charge 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, Engineer-in-charges, Structural Consultants, Department etc. besides providing space for names of other Contractors, Sub-Contractors and specialized agencies within 30 days from issue of award letter. Nothing extra shall be payable on this account. In case of non-compliance/delay in compliance in this, a penalty @ Rs. 500/- per day will be imposed which will be recovered from the immediate next R/A Bill of the Contractor.

C=
I=
O= } Nil AE(P) EE

50. 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.

51. **SETTING OUT**

51.1. Contractor shall provide permanent bench marks 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.

51.2. 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 architectural drawings and actual layout at site shall be immediately 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 centre lines, etc., Nothing extra shall be payable on this account.

51.3. 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.If at any time, any error in this respect shall appear 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. Nothing extra shall be payable on this account.

51.4. Though the site levels may be indicated in the drawings the contractor shall ascertain himself and confirm the site levels with respect to GTS bench mark from the concerned authorities.

51.5. The contractor shall ascertain and confirm the site levels with respect to benchmark from the concerned authorities. The contractor shall protect and maintain temporary/ permanent benchmarks at the site of work throughout the execution of work. These benchmarks 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.

51.6. The approval by the Engineer-in-Charge of the setting out by the contractor shall not relieve the contractor of any of his responsibilities 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.

51.7. The contractor shall be entirely and exclusively responsible for the horizontal, vertical and other alignment, the level and correctness of every part of the work and shall

C= I= O=	Nil	AE(P)	EE

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.

52. **PROGRAMME CHART**

52.1. The Contractor shall prepare an integrated programme chart in MS Project, Primavera software, **or as approved by Engineer-in-charge** for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, equipment and machinery required for the fulfilment of the programme within the stipulated period or earlier and submit the same for approval to the Engineer-in-Charge within ten days of award of the contract. Non-submission of such programme shall attract the recoveries as mentioned in the Schedule-F of the tender document. The integrated program chart so submitted should not have any discrepancy with the physical milestones attached in the contract agreement.

52.2. The programme chart should include the following:

(a) Descriptive note explaining sequence of the various activities.

(b) Network (PERT/CPM/BAR CHART) in MS Project/Primavera Software

(c) Programme for procurement of materials by the contractor.

(d) Programme of procurement of machinery / equipment having adequate capacity, commensurate with the quantum of work to be done within the stipulated period, by the contractor.

52.3. In addition to above, the contractor shall submit shuttering schedule adequate to complete structure work within laid down physical milestone etc. and to achieve the progress of work as per programme, he must bring sufficient shuttering material required for cement concrete and R.C.C. works etc.

52.4. If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved programme referred above, the contractor shall produce a revised programme showing the modifications to the approved programme to ensure completion of the work. The modified schedule of programme shall be approved by the Engineer-in-Charge. Non-submission of such revised programme shall attract the recoveries as mentioned in the Schedule-F of the tender document.

52.5. The submission for approval by the Engineer-in-Charge of such programme or the furnishing of 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.

C= I= O=	Nil	AE(P)	EE

53. **MONTHLY PROGRESS REPORT**

The contractor shall submit to the Engineer-in-charge on the 7th day of each month, 2 hard copies and one on soft copy (through CD or any other electronic form) of monthly progress report of the. Such progress report will include the project progress, summary, work progress (planned vs. actual), CPM chart, status of financial progress and achievement of milestone, manpower deployment status, inventory of materials and photographs of important activities. For delay in submission of the report, or submission of incomplete report without all the details mentioned herein below recovery from the contractor as mentioned in Schedule F of the contract shall be made.

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

(i) Project information, giving the broad features/ brief scope of the contract of the work under the contract, and the broad structural or other details.

(ii) Construction schedule of the various components of the work through a bar chart for the next two fortnights (or as may be specified), showing the milestones, targeted tasks and up to date progress.

(iii) 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 reasons for deviations, if any, in a tabular format.

(iv) Plant and machinery statement, indicating those deployed in the work, and their working status/ condition.

(v) Man-power statement, indicating individually the names of all the staff deployed in the work, along with their designations. No. of skilled workers (trade wise) and total no. of unskilled workers deployed on the work and their location of deployment, activity wise & block wise.

(vi) Financial statement, indicating the broad details of all the running account payments received upto date, such as gross value of work done, advances taken, recoveries effected, amounts withheld, net payments, details of cheque payments received, etc.

(viii) A statement showing the extra and substituted items submitted by the contractor, and the payments received against them, items pending for sanction/decision by the Department, broad details of the Bank Guarantees, indicating clearly their validity periods, broad details of the insurance policies taken by the contractor, if any, the advances received and adjusted.

(ix) Progress photographs, in colour, of the various items/components of the work done up to date, to indicate visually the actual progress of the work.

Nothing extra, whatsoever, shall be paid on account of the aforesaid submission of monthly report.

C=
I=
O= } Nil AE(P) EE

54. **SAFETY PRECAUTIONS**

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

54.2. Unless provided otherwise elsewhere in the contract, contractor at his cost put up the barricading all around the construction site through suitable method for segregating the construction site and also to control the dust pollution in the campus. Entry to the site shall be controlled for proper security of man and materials and to avoid accidents.

54.3. Necessary personal protective and safety equipment's such as helmet, safety shoes & harness, gloves etc. shall be provided to the all site Engineers, Supervisory staff, labour and technical staff of the contractor by the Contractor at his own cost and to be used at site.

54.4. The Contractor(s) 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 existing/new work due to negligence on his part. No hindrances shall be caused to traffic during the execution of the work.

54.5. In case of any accident of labours/ contractual staff's the entire responsibility will rest on the part of the contractor and any compensation under such circumstances if becomes payable the same shall be entirely borne by the contractor and department shall have no role on this account.

54.6. It shall be ensured by the contractor that no electric live wire is left exposed or unattended to avoid any accidents in this regard.

54.7. Any trenching and digging for laying sewer lines/water lines/cables etc. shall be commenced by the contractor only when all men, machinery's and materials have been arranged and closing of the trench(s) thereafter shall be ensured within the least possible time.

54.8. For facia work, outer finishing and other RCC works etc. double steel scaffolding having two sets of vertical supports with steel staircase for inspection of works by engineer in charge shall be used. The supports shall be sound and strong, tied together with horizontal piece over which scaffolding planks shall be fixed.

55. **QUALITY ASSURANCE**

55.1. 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.

55.2. The contractor shall ensure quality control measures on different aspects of construction including materials, workmanship and correct construction methodologies to be adopted. He shall have to submit quality assurance programme

C= I= O=	Nil	AE(P)	EE

within two weeks of the award of work. The quality assurance programme should include method statement for various items of work to be executed along with check lists to enforce quality control.

~~55.3. The contractor shall depute Quality Manager exclusively for enforcement of quality control. Such Quality Manager should be a qualified engineer with minimum Eight years of similar experience. For other staff to be deployed for quality assurance, the contractor may refer to clause 32 under schedule "F" attached.~~

55.4. Wherever work is specified to be done through specialized agencies, their names shall be got approved well in advance from Engineer in charge. 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 specialist agencies and send their names for approval to Engineer in charge.

55.5. All materials obtained from Govt. Stores or otherwise shall be got checked by the Engineer-in-Charge or his any authorized supervisory staff on receipt of the same at site before use.

55.6. Materials used on work without prior inspection and testing (where testing is necessary) and without approval of the Engineer-in-Charge are liable to be considered unauthorized, defective and not acceptable. The Engineer-in-Charge shall have full powers to order the removal of any or all of the materials brought to site by contractor which are not in accordance with the contract specifications or do not confirm, in character or quality to the samples approved by the Engineer-in-Charge. In case of default on the part of the contractor in removing rejected materials, the Engineer-in-Charge shall be at liberty to have them removed at the risk and cost of the contractor

55.7. The contractor shall provide at his own cost suitable weighing, surveying, levelling and measuring arrangements at site for checking the weight, layout, levels, dimensions as may be necessary for execution of work and directed by Engineer in charge at site for checking. All such equipment shall be got calibrated in advance from laboratory, approved by the Engineer-in-Charge. The sealed samples are to be handed over to the testing lab by contractor in the presence of Junior Engineer/Assistant Engineer-in-Charge of work. Nothing extra shall be payable on all these account.

55.8. **Samples of various materials required for testing shall be provided free of charges by the contractor. Testing charges, if any, unless otherwise provided in the contract shall be borne by the contractor. All other expenditure required to be incurred for taking the samples; conveyance, packing etc. shall also be borne by the contractor himself.**

55.9. 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 results or such tests and consequences thereon shall be binding on the contractor.

C= I= O=	Nil	AE(P)	EE

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

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

55.12. For ensuring quality of concrete, non-destructive tests such as UPV (Ultrasonic Pulse Velocity) or Rebound Hammer shall be performed on the concrete members particularly columns as per guidelines issued by Technical Circular No. 18 issued vide letter No. G-2/SE(QA)/CSQ/69 dated 12.02.2013. The cost of such tests shall be borne by the department. However all necessary assistance for conducting the test shall be provided by the contractor.

55.13. Samples of all materials and fittings to be used in the work in respect of brand manufacturer and quality 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. 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 approved list of brand names given in the tender document / additional specifications for approval of Engineer-in-charge. For all other items, materials and fittings of ISI Marked 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 and use the same only after getting the approval.

55.14. 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.

55.15. The contractor shall get the source of all other materials, not specified elsewhere in the document, approved from the Engineer-in-Charge. The contractor shall stick to the approved source unless it is absolutely unavoidable. Any change shall be done with the prior approval of the Engineer-in-Charge for which tests etc. shall be done by the contractor at his own cost. Similarly, the contractor shall submit brand/ make of various materials not specified in the agreement, to be used for the approval of the Engineer-in-Charge along with samples and once approved, he shall stick to it.

55.16. The contractor shall get the water tested with regard to its suitability and conforming to the relevant IS Code. The contractor shall obtain written approval from the Engineer-in-Charge before he proceeds by using the same for execution of work. The water testing charges shall be borne by the contractor. If tube well water is not suitable, the contractor shall arrange Municipal water or from any other source at his

own cost and nothing extra shall be paid on this account. The water shall be got tested at frequency specified in latest CPWD Specifications / BIS Code.

55.17. The Stone aggregate/stone, sand shall be brought from any quarries subjected to the said materials conform CPWD specifications.

55.18. The gradation of fine sand to be used in plaster work shall be strictly as per CPWD Specifications 2019, conforming to IS:1542-1977. The plastered surface shall be fairly smooth without any undulation of any kind for applying paint/white wash.

55.19. Contractor shall prepare and submit shop drawings/layout drawings for approval of Engineer in charge, before taking up execution of different activities like staging and shuttering arrangement, **structural steel items, trusses, frames aluminium doors& windows, uPVC doors & windows**, **fire door shutters**, **plumbing for water supply and drainage, sewer lines & manholes with IL, ACP cladding, stone cladding, glass curtain walls etc.** or any other activity as directed by Engineer in charge. Contractor shall be required to make modifications as may be directed by the Engineer in charge in the submitted shop drawings and shall resubmit modified shop drawings. Contractor shall not be allowed to execute the related items without approval of such shop drawings and he shall be fully responsible for all contractual implications, for any delay caused, if any, on account of delay in submission of such shop drawings or modified shop drawings. Nothing extra, whatsoever, shall be paid on this account and his quoted amount shall be deemed to be inclusive of all such activities.

55.20. Shop drawings/layout 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 program.

55.21. The contractor shall invariably prepare the samples of finishing items i.e. flooring of different types, external & internal finishing i/c colour scheme of paint, tiles in dado, flooring in platforms & staircase, water supply & sanitary fittings and any other item as per direction of Engineer-in-charge. The contractor shall proceed with further finishing items only after getting the samples of these items approved in writing from Engineer-in-charge. Toilets and in case of construction of residential quarters, one sample quarter complete in all shape for each category, shall be prepared by the contractor and got approved from Engineer-in-charge in writing. The contractor shall be allowed to proceed with further quarters only after getting the sample quarters approved in writing from Engineer-in-charge No extra claim whatsoever beyond the payments due at agreement rates will be entertained from the contractor on this account.

55.22. The construction joints shall the provided in predetermined locations only as decided by Engineer in charge. The cost of shuttering for these construction joints shall be

C= I= O=	Nil	AE(P)	EE

included in item of Concrete work / RCC work and nothing extra shall be payable on this account to the contractor.

55.23. Water tanks, taps, sanitary, water supply and drainages pipes, fittings and accessories should conform to the specifications provided in bidding documents. 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(s) shall submit for the approval to the Engineer-in-Charge the name of the plumbing agency proposed to be engaged by him.

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

55.25. The contractor shall give a performance test of the entire installation(s) as per standing specifications before the work is finally accepted by making his own arrangements for water supply, electricity etc. and nothing extra whatsoever shall be payable for the same.

55.26. Door/window frames/shutters and other factory-made materials shall be procured from reputed and approved manufacturers or their authorized dealers. Decision of Engineer-in-charge in this regard shall be final and binding.

55.27. **Testing of Materials:**

(i) **Laboratory at site:** The contractor shall establish a testing lab at site and provide testing equipment and materials for the field tests mentioned in the list of mandatory tests given in CPWD Specifications 2019 Vol. 1 & 2. Nothing extra shall be payable to him on this account. The representatives of the department shall be at liberty to inspect the testing facilities at site and conduct testing at random in consultation with Engineer in charge. The contractor shall provide all necessary facilities for the purpose. The laboratory shall be equipped, inter alia, with the following equipment:

a) **Balances:**

i) 7 kg to 10 kg capacity, semiself-indicating type – Accuracy 10 gm.

ii) 500 gm capacity, semiself-indicating type Accuracy 1 gm.

iii) Pan Balance- 5 kg Capacity- Accuracy 10 gm.

b) **Ovens-** Electrically operated, thermostatically controlled up to 1100C- Sensitivity 10C.

c) **Sieves:** as per IS: 460

i) IS Sieves – 450 mm internal dia of sizes 100 mm, 80 mm, 63 mm, 50 mm, 40 mm, 25 mm, 20 mm, 12.5 mm, 10 mm, 6.3 mm, 4.75 mm, complete with lid and pan.

C= I= O=	Nil	AE(P)	EE

ii) IS Sieves – 200 mm internal dia (brass frame) consisting of 2.36 mm, 1.18 mm, 500 microns, 425 microns, 300 microns, 212 microns, 150 microns, 90 microns, 75 microns with lid and pan.

d) Sieve shaker capable of 200 mm and 300 mm dia sieves, manually operated with timing switch assembly.

e) Equipment for slump test- slump cone, steel plate, taping rod, steel scale, scoop.

f) Equipment for concrete testing

i) Concrete cube moulds 15x15x15cm : 18Nos.

ii) Pruning Rods 2Kg weight length 40cm and ramming face 25mm : 1 No.

iii) Extra Bottom plates for 15cm cube mould :6 Nos.

iv) Standard Vibration table for cubes : 1 No

v) Dial gauges 25 mm travel- 0.01 mm/division Least count- : 1 No.

vi) Electrically operated Compression testing machine of 100 tonne capacity with digital display : 1 No.

Not less than 90% tests for material be performed at site lab with above stated equipment's, however at least 10% testing of materials shall be got done from external laboratories. However, for the tests to be carried out by the external laboratories, the contractor shall supply free of charge all the materials required for testing, including transportation. If the tests which were to be conducted in the site laboratory are conducted in other laboratories for any the reasons the cost of such tests shall be borne by the contractor.

(ii) **Other Laboratories:** The contractor shall arrange carrying out all tests required under the agreement through the laboratory as approved by the Engineer-in-Charge and shall bear all charges in connection therewith including charges for testing for all materials except cement for which separate condition is provided in tender document.

55.28. **Maintenance of Site Registers:**

(i) All the Site Registers including Tests registers for tests to be carried out at construction site or in outside laboratories shall be maintained by the contractor which shall be issued to the contractor by Engineer-in-Charge in the same manner as being issued to CPWD field staff.

(ii) The various registers to be issued to the contractor are:

- Materials at site account register.
- Cement register.
- Master test registers.

C=
I=
O= } Nil AE(P) EE

- Cube test register.
- Paint register.
- Inspection register.
- Drawing register.

(iii) All the entries in the registers will be made by the designated engineering staff of the contractor and same should be regularly reviewed by JE/AE/EE.

(iv) All the registers of tests carried out at construction site or in outside laboratories shall be maintained by the contractor which shall be issued to the contractor by Engineer-in-Charge in the same manner as being issued to CPWD field staff.

(v) All samples of materials including cement concrete cubes shall be taken jointly with contractor by JE and out of this at least 50% samples shall be taken in presence of AE in charge. If there is no JE, all samples of materials including cement concrete cubes shall be taken by AE jointly with contractor. All the necessary assistance shall be provided by the contractor. Cost of sampling & testing are to be borne by the contractor and he shall be responsible for safe custody of samples to be tested at site/ outside laboratory.

(vi) All the tests in field lab at construction site shall be carried out by the Engineering staff deployed by the contractor and shall be 100% witnessed by JE and 50% of tests shall be witnessed by AE –in-Charge. At least 10% of the tests are to be witnessed by the Executive Engineer. Minimum 25% of all samples should be tested in outside approved laboratory/ Govt. Engineering colleges.

(vii) Submission of copy of all test registers, material at site register along with each alternate running account bill and final bill shall be mandatory. These registers should be duly checked by AE(P) in division office.

55.29. **Removal of Rejected / Sub-standard Materials:**

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

a) 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.

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

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

C= I= O=	Nil	AE(P)	EE

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

56. **AS BUILT DRAWINGS:**

On completion of work, the Contractor(s) shall submit at his own cost four prints of "as built" drawings to the Engineer-in-Charge within 30 days of completion of work. These drawings shall have the following information.

(i) **Route of** all piping and their diameters including soil waste pipes and vertical stacks.

(ii) Ground and invert levels of all drainage pipes together with locations of all manholes and connections, up to outfall.

(iii) **Route of** all water supply line with diameters, locations of control valves, access panels etc.

On failure of the contractor to do so action shall be taken as per the clause 8A of the General Conditions of the Contract.

57. Contractor shall be mandatorily be required to provide to the engineer-in charge certified copies of original invoices of all kind of materials, T&P etc. being used or procured for this agreement. Failure to provide any of such information to engineer-in-charge to his satisfaction shall render the contractor ineligible for payment for such items and no claim what so ever on this account shall be admissible and decision of engineer-in-charge in this regard shall be final and binding.

58. **Condition regarding secured advance:-**

Secured advance shall be admissible only on those bonafide materials which are likely to be used in the work in a period not exceeding six months from the date of secured advance payment. If agency fails to use the material (in respect of which secured advance have been paid) in the work in this specified period of six month, the said component of secured advance shall be recovered from next running account bill paid to the agency. Secured advance on the same material shall not be paid again.

59**. List of approved laboratories for testing:-**

Laboratories approved by the competent authority i.e. **ADG(Lucknow)** or Successor thereof.

60. Contractor shall provide minimum three samples of three different makes for each item of work as per the list of approved makes for the approval of engineer-in-charge. It shall be the discretion of Engineer-in-charge to approve any of the three samples to be submitted by the contractor and decision of engineer-in-charge in this regard shall be final and binding and nothing extra, whatsoever, shall be admissible on this ground.

61. The contractor shall render all help and assistance in documenting the total sequence of this project by way of photography, slides, audio-video recording etc. Nothing extra shall by payable to the contractor on this account.

C=
I= } Nil AE(P) EE
O=

62. The contractor shall be responsible for the watch and ward/guard of the buildings, safety of all fittings and fixtures including all equipment's, services provided by him against pilferage and breakage during the period of Installations and thereafter till the building is physically handed over in complete shape to the CPWD. The CPWD will take over the building after rectification of all defects. No extra payment shall be made on this account and no claim shall be admissible on this account.

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

64. The contractor shall protect and indemnify the CPWD, 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 or any of his other direct or indirect action taken in relation to the execution of this work. Nothing extra shall be payable on these accounts. In case of failure on part of the contractor in this respect, department shall be free to recover any such amount due to the contractor under this contract or any other contract under the government and the decision of the Engineer in charge in this regard shall be final and binding on the contractor.

65. The item of Brick work with non modular cement fly ash bricks conforming to IS: 16720, in foundation and plinth shall be used only in boundary walls above plinth level up to 1.2 m height. The use of fly ash bricks below ground level should be avoided.

66. Performance Guarantee:

66.1 PG shall be 5% of the **Estimated cost put to tender (ECPT) or contract amount whichever is higher**, or as prescribed from time to time, to be submitted in the form as

C= I= O=	Nil	AE(P)	EE

prescribed in GCC. Performance Guarantee shall remain valid for a minimum period of **six months** beyond the date of completion of all contractual obligations as per GCC. In case of contracts where supplementary agreement is drawn, the fresh PG shall be obtained from the contractor @ 5% of the amount of the supplementary agreement or as prescribed from time to time. The PG received against the original work shall be released as per contract conditions.

66.2 A bid will be treated as abnormally low if the quoted bid amount is less than 80% of the estimated cost put to tender.

66.3 Requirement of Additional Performance Guarantee (APG): In case of abnormally low bids as defined above, the contractor shall be required to submit Additional Performance Guarantee (APG) in addition to the Standard Performance Guarantee (PG). Performance Guarantee (APG) shall be equivalent to the difference between the 80% amount of ECPT and quoted amount. (e.g. if ECPT is A and quoted amount is 0.7A then the amount of APG shall be 0.8A -0.7A)

66.4 The Additional Performance Guarantee (APG) shall be in the prescribed format of Performance Guarantee and has to be submitted within prescribed time frame of submission for Performance Guarantee. The other terms and conditions pertaining to validity, release, forfeiture etc. of APG shall be same as that of PG.

66.5 In case the time of completion of work gets enlarged, the contractor shall get the validity of PG and APG (if any) extended to cover such enlarged time for completion of work. However, no interest, bank fee etc. whatsoever shall be payable to the contractor for getting the validity of PG & APG extended.

C=
I= } Nil AE(P) EE
O=

SPECIAL CONDITIONS

1. SPECIAL CONDITIONS FOR CEMENT:

1.1. The contractor shall procure 43 grade Ordinary Portland Cement (OPC) conforming to IS:8112/Portland Pozzolana Cement (PPC) conforming to IS: 1489 (Part-I) as required in the work, from reputed manufacturers of cement, such as ACC, Ultratech, Vikram, Shree Cement, Ambuja, Jaypee Cement, Century Cement, J.K. Cement, **or from any other reputed cement Manufacturer having a production capacity not less than one million tonnes per annum as approved by ADG for the region.**

The tenderers may also submit a list of names of cement manufacturers which they propose to use in the work depending upon availability in the local market but conforming to the grade mentioned in NIT and only with ISI mark. The tender accepting authority reserves right to accept or reject name(s) of cement manufacturer(s) which the tenderer proposes to use in the work. No change in the tendered rates will be accepted if the tender accepting authority does not accept the list of cement manufacturers, given by the tenderer, fully or partially.

Supply of cement shall be made in 50 kg. bags bearing manufacturer's name and ISI marking. Samples of cement arranged by the contractor shall be taken by the Engineer-in-Charge and got tested in accordance with provisions of the relevant BIS codes. In case the test results indicate that the cement arranged by the contractor does not confirm to the relevant BIS code the same shall stand rejected and shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer-in-charge to do so.

1.2. The cement shall be brought at site in bulk supply of approximately **25 tonnes** or as decided by the Engineer-in-Charge.

1.3. The cement godown of the capacity to store a minimum of **1000 bags** of cement or as decided by Engineer-in-Charge shall be constructed by the contractor at site of work for which no extra payment shall be made.

1.4. Double lock provision shall be made to the door of the cement godown. The keys of one lock shall remain with the Engineer-in-charge or his authorized representative and the key of the other lock shall remain with the contractor. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-Charge at any time.

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

The cost of tests shall be borne by the contractor.

1.6. The actual issue and consumption of cement on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of cement shall be worked out as per procedure prescribed in clause 38 of the General Condition of contract and shall be governed by conditions laid therein. In case the cement consumption is less than theoretical consumption including permissible variation, recovery at the rate show prescribed shall be made. In case of excess consumption, no adjustment need to made.

C= I= O=	Nil	AE(P)	EE

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

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

1.9. Cement bags shall be stored in separate godown to be constructed by the contractor at his own cost as per sketch (which is only indicative and actual size will depend on the site requirements) given in CPWD specifications with weather proof roofs and walls. The godown shall be provided with a single shutter door with two locks. The key of one lock shall remain with Engineer-in-charge or his authorized representative and that of the other lock with the authorized agent of the contractor at the site of work so that the cement is issued from the godown according to the daily requirements with the knowledge of both parties and proper account for the same is maintained in the standard proforma.

1.10. Separate cement registers showing the receipt of the OPC and PPC shall be maintained at site. The contractor shall construct separate godowns for storage of OPC & PPC at site and nothing extra on this account shall be payable.

1.11. In order to have an effective control over the issue of cement, the following drill should be observed:

(i) The cement godown(s) should be properly and effectively double locked, keys of one of the locks remaining with the department and that of the other with the contractor.

(ii) The pages of the Cement Register should be as per Appendix-28 of CPWD Works Manual, machine numbered and issued by the Engineer-in-charge.

(iii) Periodical checking of cement godown.: The cement godown and the Cement Register should be checked by the Assistant Engineer/Executive Engineer in-charge of the work as per following schedule:

a) At least weekly or fortnightly, respectively, in case of works at the headquarters of the Assistant Engineer/Executive Engineer.

b) Whenever they visit the site of work in case of works that are located outside the Sub-Divisional/Divisional headquarters.

2. SPECIAL CONDITIONS FOR STEEL REINFORCEMENT BARS:

2.1. The Contractor shall procure IS marked TMT steel bars or low alloy steel bars of various grades from Primary Steel manufacturer such as **SAIL, Tata Steel Ltd, RINL, Jindal Steel & Power Ltd and JSW Steel Ltd,** or any other steel manufacturer or their authorized dealers (as per selection criteria laid down by the Department from time to time) having valid BIS license for IS:1786-2008 (Amendment -1 November 2012).

2.2. The steel bars manufactured in India shall be classified, for the purposes of their use in work of CPWD, as under:

1) Bar Set I, if it complies with the requirements given in the latest version of IS: 1786, and additional requirement (e.g. Chemical Composition Requirement for Manganese and Copper, Tempered Martensite (TM) Ring

C= I= O=	Nil	AE(P)	EE

Requirement, Marking Requirement and compliance of the provisions of ISO 9001:2015 and ISO 14001 :2004) as mentioned in Para 2.23 of this Section, and

2) Bar Set II, if it complies with the requirements given in the latest version of IS 1786.

2.3. Reinforcement steel bars to be used in this work shall be of type **Bar Set I** having grade 550D.

2.4. The contractor shall have to obtain vouchers and furnish test certificates to the Engineer-in-charge in respect of all supplies of steel brought by him to the site of work

2.5. 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 or written orders from the Engineer-in-Charge to do so.

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

2.7. The steel reinforcement shall be stored by the contractor at site of work in such a way as to prevent 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.

2.8. For checking nominal mass, tensile strength, bend test, re-bend test etc. specimen of sufficient length shall be cut from each size of the bar at random at frequency not 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 25 tonnes or part thereof	One sample for each 40 tonnes or part thereof
10mm to16mm dia bars	One sample for each 35 tonnes or part thereof	One sample for each 45 tonnes or part thereof
Over 16mm dia bars	One sample for each 45 tonnes or part thereof	One sample for each 50 tonnes or part thereof

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

2.10. The actual issue and consumption of steel on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of steel shall be worked out as procedure prescribed in clause 38 of the General Conditions of 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 need to be made.

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

C=
I=
O= } Nil AE(P) EE

2.12. Steel bars brought by the contractor for use in the work shall be got checked from the Engineer-in-Charge or his authorized representative of the work on receipt of the same at site before use.

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

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

2.15. The standard sectional weights referred to as in Table 5.4 under para 5.3.4 in CPWD Specifications for works 2019 Vol. 1 will be considered for conversion of length of various sizes of MS bars, Tor steel bars and TMT bars into standard weight.

2.16. Records of actual sectional weight shall also be kept dia-wise & 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.

2.17. If the derived weight as in para 2.14 above is lesser than the standard weight as in para 2.13 above, the derived actual weight shall be taken for payment. If the derived actual weight is found more than the standard weight then the standard weight as worked out in para 13 above shall be taken for payment. In such case nothing extra shall be paid for the difference between the derived actual weight and the standard weight.

2.18. Mixing of different type of steel/different grades of steel shall not be allowed in the same structural members as main reinforcement to satisfy clause 26.1 of IS:456.

2.19. Tolerances on Nominal Mass (individual sample) shall be as under:

S. No.	Nominal size mm	Tolerances on the Nominal Mass (in %age)
1	Upto and including 10 mm	-8%
2	Over 10 upto & including 16 mm	-6%
3	Over 16 mm	-4%

2.20 The reinforcing steel brought to site of work shall be stored on brick/ timber platform of 30/40 cm height, nothing extra shall be paid on this account.

2.21 <u>If Bar Set-1 rebars are not available</u>:- As a matter of policy only Bar Set-1 steel bars are to be used for the work. It has been observed that Bar Set-1 bars are not available/ or have delayed delivery in few instances. Considering the practical situation and to take care of such instances, the Engineer-in-charge may allow use of TMT bars of same grades as specified in that NIT from the list of approved makes, given elsewhere in the NIT.

C=
I=
O= } Nil AE(P) EE

In such case, payment under agreement item for TMT bars shall only be made and nothing shall be paid under the agreement item, extra for Bar Set-1 steel instead of TMT bars.

2.22 <u>Testing requirement for individual reinforcement bar diameter of Particular Grade of steel:</u>

Tests required for Fe 415D, Fe500D, Fe550D grade of steel and Low alloy steel reinforcement bars:

A. FOR BAR SET-I

1. Tests as per IS 1786 (latest version) and specified therein

1.1 **Chemical Properties**

Ladle analysis of steel for above grades for maximum percentage of constituents

i. Carbon (C), (ii) Sulphur (S) and (iii) Phosphorous (P) and (iv) Nitrogen and Carbon Equivalent

1.2 Physical Properties

(i) 0.2 percent proof stress / yield stress, minimum, N/mm2.

(ii) Ratio of Tensile Strength (Ts) to Actual Yield Strength (or 0.2 % of yield stress (Ys) of the test piece N/mm2.

(iii) Elongation, percent, Minimum, on gauge length $5.65\sqrt{A}$, where A is the cross-sectional area of the test piece.

(iv) Total elongation at maximum force, percentage, minimum on gauge length $5.65\sqrt{A}$, where A is the cross-sectional area of the test piece.

(v) Bend test and re-bend test.

(vi) The mean area of ribs (in mm2) per unit length (in mm) above the core of the bar, projected on a plane normal to the axis of the bar.

(vii) Pull-out testing in accordance with IS 2770 (Part 1)

2. **Additional requirement**

2.1 Permissible limit for Manganese and Copper as follows:

Constituent	Permissible Limit (% of cast metal quantity)		
	Fe 415 D	Fe 500 D	Fe 550 D
Manganese (Mn)			
Maximum	1.60	1.60	1.60
Copper (Cu)			
Maximum	0.80	0.80	0.80
Minimum	0.20	0.20	0.20

Notes:

The above composition shall be obtained as per latest version of IS 228

1. Manganese using Periodate Spectrophotometric Method **(Part 12),** and
2. Copper using Thiosulphate Iodide Method (**Part 15)** or Spectrophotometric (Diethyl Dithiocarbonate) Method **(Part 21)**

2.2 Tempered Martensite Ring Test as per Annexure-I (d).

2.3 The process of manufacturing steel shall comply with the provisions of ISO9001: 2015 and ISO14001: 2004.

(B)FOR BAR SET-II

1. The test requirements given in para 1.1 and 1.2 above.

2.23 Criteria for Classification of Bars

Annexure-I(d)

1. CRITERIA FOR CLASSIFICATION OF BARS

The steel bars manufactured in India shall be classified as specified hereunder for the purposes of their use in works of CPWD.

1.1 Process of Classification

Steel Bars shall be classified as *Bar Set I* and *Bar Set II*. The bars shall be placed under one of these categories based on *Type Test* (the test performed to select the bars) performed as specified hereunder. These tests to be performed are those specified in the latest version of **IS 1786** published by the Bureau of Indian Standards, and the additional tests mentioned in Para **2** of this document.

The *Type Test* shall be performed at any one of the National Test Houses, IITs, NITs, and NCCBM, subject to:

(a)The test samples being collected from the manufacturing facility by the representative engineer of CPWD,

(b) The availability of the required test facility at the said laboratory, and

(c) The test being witnessed by representative engineer of CPWD.

1.2 Classification of Steel Bars

The bar shall be classified as:

(1) *Bar Set I*, if it complies with the requirements given in the latest version of **IS: 1786**, and those given in Para **2** of this document, and

(2) *Bar Set II*, if it complies with the requirements given in the latest version of **IS 1786**.

2. ADDITIONAL REQUIREMENTS

Four additional requirements as specified hereunder.

2.1 Chemical Composition Requirement

The permissible limits of additional elements shall be as per **Table 1**.

C= I= O=	Nil	AE(P)	EE

Table 1: Permissible limits of additional elements

Constituent	Permissible Limit (% of cast metal quantity)		
	Fe 415 D	Fe 500 D	Fe 550 D
Manganese (Mn)			
Maximum	1.60	1.60	1.60
Copper (Cu)			
Maximum	0.80	0.80	0.80
Minimum	0.20	0.20	0.20

Notes:

The above composition shall be obtained as per latest version of **IS 228**:

(1) Manganese using Periodate Spectrophotometric Method (**Part 12**), and

(2) Copper using Thiosulphate Iodide Method (**Part 15**) or Spectrophotometric (Diethyl Dithiocarbonate) Method (**Part 21**).

2.2 TM Ring Requirement

The following two requirements shall be met with:

(1) Does the *Tempered Martensite(TM) Ring* satisfy the visual analysis as per **Step 1** of **Table 2**; and

(2) The thickness of the TM Ring obtained as per **Step 2** of **Table 2** shall be between 0.07f and 0.15f, where f is the *original nominal diameter* of the bar.

(a) Test Procedure

The following is the procedure:

(1) The test setup to capture the *Cross-Sectional Phase Distribution (CSPD)* of the TMT bars shall be as shown in **Figure 1**.

(2) Steel bars may be cut using handsaw or an abrasive cutter with continuous supply of coolant to limit the temperature of steel, and thereby avoid any transition or changes in *Tempered Martensite(TM)* and *Ferrite-Pearlite (FP)* phases (**Figure 2**). The sharp edges of cut bars should be smoothened using

silicon carbide abrasive sheets. A metal polishing machine can be used to achieve effective smoothening.

(3) The smoothened steel specimen shall be moulded in cold setting epoxy with good surface finish. Setting time of epoxy is about 10-15 minutes.

(4) The moulded specimen surface shall be course polished using abrasive sheets of 80, 150, 220, 320, and 600 grit sizes in sequence. Specimens shall be micro-etched using Nital (5% Nitric acid in alcohol) to capture the CSPD.

(b) Measurements

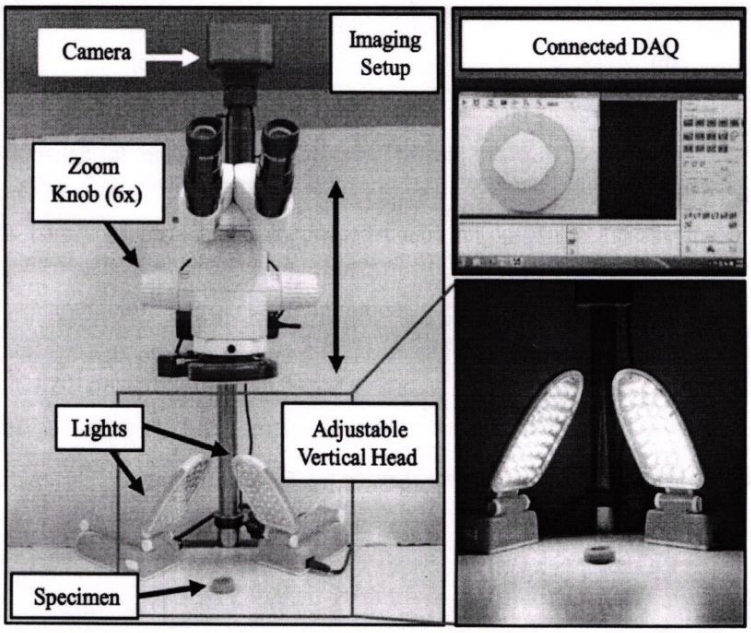
The procedure for obtaining the *CSPD* of the TM Ring along the perimeter shall be as per **Table 2**.

2.3 Marking Requirement

All bars shall have marks introduced during rolling, which indicate the *name of manufacturer* or *brand name*, and *grade of steel*.

2.4 Manufacturing Process Requirement

The process of manufacturing steel shall comply with the provisions of ISO 9001:2015 and ISO 14001:2004.



(a)

C=
I=
O=
Nil AE(P) EE

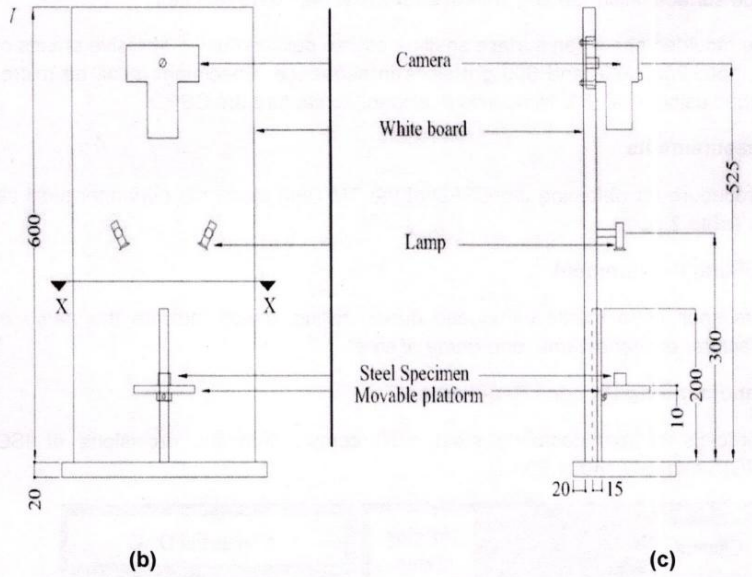


Figure 1: Test setup for CSPD of the TMT bars: (a) Imaging Setup, (b) Schematic Front View (c) Schematic Side View

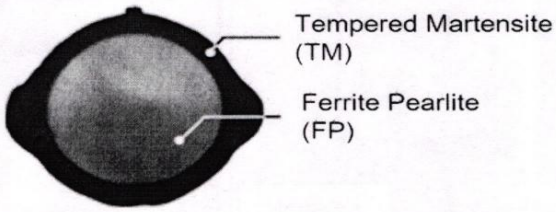
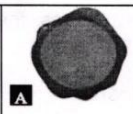
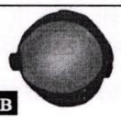
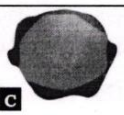
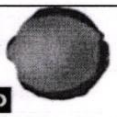
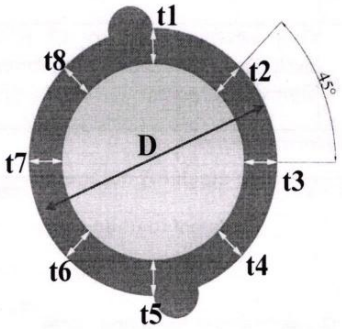


Figure 2: Cross-section of the steel bar showing the TM and FP areas

C=
I=
O=

Nil AE(P) EE

Table 2: Method of obtaining CSPD of TM Ring

Step 1: Visual Analysis of etched Cross-Section				
	 A	 B	 C	 D
	Acceptable	*Not acceptable*	*Not acceptable*	*Not acceptable*
1.	Is a dark grey peripheral region and light grey core seen as in Case A?			Yes/No
2.	Does the dark grey peripheral region form a continuous outer ring?			Yes/No
Step 2: Dimension Analysis of TM-Ring thickness				
3.	Diameter D *(mm)* of the steel bar			
4.	**Geometry** 		t_1	
			t_2	
			t_3	
			t_4	
			t_5	
			t_6	
			t_7	
			t_8	
			Measured t_{min} *(mm)*	
			Measured t_{max} *(mm)*	
5.	Is the measured $t_{min} \geq 0.07$ f ?		Yes / No	
	Is the measured $t_{max} < 0.15$ f ?		Yes / No	

3 SPECIAL CONDITIONS FOR PREVENTION OF AIR POLUTION AS PER DIRECTIVES OF NATIONAL GREEN TRIBUNAL (NGT):

3.1 The contractor shall not store/dump construction material or debris on metalled road.

3.2 The contractor shall get prior approval from Engineer-in-charge for the area where the construction material or debris can be stored beyond the metalled road. This area shall not cause any obstruction to the free flow of traffic/inconvenience to the

pedestrians. It should be ensured by the contractor that no accidents occur on account of such permissible storage.

3.3 The contractor shall take appropriate protection measures like raising wind breakers of appropriate height on all sides of the plot/area using CGI sheets or plastic and/or other similar material to ensure that no construction material dust fly outside the plot area. Nothing extra shall be paid on is account unless provided otherwise.

3.4 The contractor shall ensure that all the trucks or vehicles of any kind which are used for construction purpose or are carrying construction material like cement, sand and other allied materials are fully covered. The contractor shall take all necessary precautions that the vehicles are properly cleaned and dust free to ensure that enroute their destination, the dust, sand or any other particles are not released in air / contaminate air.

3.5 The contractor shall provide mask to every worker working on the construction site and involved in loading, unloading and carriage of construction material and construction debris to prevent inhalation of dust particles.

3.6 The contractor shall provide all medical help, investigation and treatment to the workers involved in the construction of building and carry of construction material and debris relatable to dust emission.

3.7 The contractor shall ensure that C&D waste is transported to the C&D waste site only and due record shall be maintained by the contractor.

3.8 The contractor shall ensure compulsory use of wet jet in grinding and stone cutting.

3.9 The contractor shall comply all the preventive and protective environmental steps as stated in the MoEF guidelines, 2010.

3.10 The contractor shall comply all the upto date preventive and protective environmental steps as stated in the MoEF guidelines, 2010. Subsequent directions issued by MOEF, NGT, CPCB, state PCB or any other appropriate govt. authority that may have been prescribed for construction works in **Subsidiary Intelligence Bureau at Jaunpur** shall have to be strictly complied with by the contractor. Nothing extra shall be paid beyond the quoted rates on this account on the rates already quoted by the contractor shall be deemed to be inclusive of such provisions except for provided otherwise.

3.11 The contractor shall ensure that all DG sets comply emission norms notified by MoEF.

3.12 The contractor shall use vehicles having pollution under control certificate. The emissions can be reduced by a large extent by reducing the speed of a vehicle to 20 KMPH. Speed bumps shall be used to ensure speed reduction. In cases where speed reduction cannot effectively reduce fugitive dust, the contractor shall divert traffic to nearby paved areas.

3.13 The contractor shall ensure that the construction material is covered by tarpaulin. The contractor shall take all other precaution to ensure that no dust particles are permitted to pollute air quality as a result of such storage.

3.14 The paving of the path for plying of vehicles carrying construction material is more permanent solution to dust control and suitable for longer duration projects.

C=
I=
O= } Nil AE(P) EE

PARTICULAR SPECIFICATIONS

1.0 EARTH WORK

1.1 The work shall be done in accordance with CPWD Specifications - 2019 - Vol. I& Vol. II and National Building Code 2016 with upto date correction slips.

1.2 Excavation shall be undertaken to the width of the Basement / Retaining wall footing including necessary margins for construction operation as per drawing or directed otherwise. Where the nature of soil or the depth of the trench and season of the year, do not permit vertical sides, the contractor at his own expense shall put up the necessary shoring, strutting and planking or cut slopes with or without steps, to a safer angle or both with due regard to the safety of personnel and works and to the satisfaction of the Engineer, Measurement of plan area of excavation for payment shall be permitted only. Nothing extra shall be paid for making steps and slopes etc. as required.

1.3 The contractor shall make at his own cost all necessary arrangements for maintaining water level, in the area where works are under execution low enough so as not to cause any harm to the 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, 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, and 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.

1.4 Sub-soil water table at work site is reported to be about 2.0 m below general ground level. The water level may vary due to rainy season or due to dewatering etc. in order to avoid possibility of basement floor of building being getting uplifted/damaged due to water pressure, the contractor shall make arrangement for lowering the ground water table below the proposed foundation level as approved by Engineer-in-charge. Sub soil water table shall be maintained at least 50 cm below the P.C.C. level during laying of P.C.C., water proofing treatment, laying of basement raft and beams including filling of earth/sand under the basement floor. The water table shall not be allowed to rise above base of raft level until completion of outer retaining walls including water proofing of vertical surface of walls and back filling along the walls up to ground level and until the structure attains such height to counter balance the uplift pressure. However, the contractor should inspect the site and make his own assessment about sub-soil water level likely to be encountered at the time of execution and quote his rates accordingly. Rate of all items are inclusive of pumping out or bailing out water, if required. Nothing extra on this account whatsoever shall be paid to him unless otherwise specified. The sequence of construction shall be got approved by the Engineer-in-charge.

C= I= O=	Nil	AE(P)	EE

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

1.6 Any trenching and digging for laying sewer lines/water lines/cables etc. shall be commenced by the contractor only when all men, machinery's and materials have been arranged and closing of the trench(s) thereafter shall be ensured within the least possible time.

1.7 The rates of items related to earthwork shall be inclusive for depths up to 3 m, superseding the depth mentioned in any related item of Schedule of Quantities & nothing extra shall be paid for additional lift etc.

1.8 For filling, if local earth is required to be procured in addition to the already available excavated earth, the same is to be arranged by the contractor at his own level. The department shall not be, in any case, responsible for informing any potential site/location where such earth is available.

2.0 CONCRETE WORK

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

2.2 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 so less used shall be recovered from the contractor at the rate as specified in schedule 'F'. Decision of the Engineer-in-Charge in regard to the quantity of cement which should have been actually used as per the schedule and recovery at the rate specified shall be final and binding on the contractor.

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

3.0 RCC/CC WORK (DESIGN MIX CONCRETE)

3.1 The Design Mix Concrete will be designated based on the principles given in BIS codes IS:456, IS:10262 & SP:23. The condition and specifications stated herein shall have precedence overall conditions and specifications stated in relevant BIS codes/CPWD specifications. The concrete mix shall be designed for specified target mean compressive strength in order to ensure that the work test results do not fall below the acceptance criteria specified for the concrete mix. The Contractor shall design mixes for each class of concrete indicating that the concrete ingredients and proportions will result in concrete mix meeting requirements specified. The mix shall be designed with quantities of admixture / plasticizer proposed to achieve required workability & strength. The specifications mentioned here in below shall be followed for Design Mix Concrete.

C=
I= } Nil AE(P) EE
O=

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

3.3 Coarse Aggregate: As per CPWD Specifications - 2019 - Vol.I & Vol. II with up to date correction slips.

3.4 Fine Aggregate: As per CPWD Specifications - 2019 - Vol.I & Vol. II with upto date correction slips.

3.5 Water: It shall confirm to requirements laid down in IS:456-2000 / CPWD Specifications - 2019 - Vol.I & Vol. II with upto date correction slips.

3.6 Cement: PPC shall be used for design mix concrete and shall conform to IS-1489 (part-I). However, if higher grade of cement is used by the contractor nothing extra shall be paid on this account.

3.7 Admixtures / Plasticizers: - The admixture shall confirm to IS:9103, wherein required, the admixture of approved quality and approved make only shall be used to attain the required workability. Nothing extra shall be paid for use of admixtures.

3.8 Grade of Concrete: The compressive strength of various grades of concrete, Characteristic Compressive Strength, water cement ratio and slump shall be as per IS:456-2000.

NOTE:

(i) In case where the quantity of cement required as per Design Mix is lower than the quantity specified in the respective item in the "schedule of quantity", necessary deduction for less quantity of cement used shall be made from the contractor.

3.9 The concrete mix design/laboratory tests with and without admixture shall be got done by contractor at his own cost and will be carried out by the contractor through one of the following laboratory/Test houses:

(i) IIT-BHU, IIT-Kanpur

(ii) MNNIT-Allahabad

(iii) HBTI-Kanpur

(iv) Approved Lab/Govt. Engineering Institutions as directed by the Engineer-in-charge.

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

C=
I=
O= } Nil AE(P) EE

3.11 In case of change of source or characteristic properties of the ingredients used in the concrete mix during the work, a revised laboratory mix design report conducted at laboratory established at site shall be submitted by the contractor as per the direction of the Engineer-in-Charge.

3.12 **Trial Batches:**

3.12.1 The designed mix proportion shall be checked for target mean compressive strength by means of trial batches.

3.12.2 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.

3.12.3 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.

3.12.4 With the modified water content, the mix pro-portions shall be recalculated by keeping with water cement ratio unchanged. The mix proportions, as modified, shall form the Trial Mix No. 2 and tested for the specified strength and workability.

3.12.5 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 + 10 percent of the specified value and tested for their design characteristics.

3.13 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 wherever required and directed by Engineer-in-Charge.

3.14 **APPROVAL OF DESIGN MIX:**

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 (s) obtained for different grades of concrete shall be as follows:

GRADE OF CONCRETE	STANDARD DEVIATION(S)
M-25	As per IS 456: 2000
M-30	
M-35	
M-40	

Minimum three sets of separate preliminary test shall be carried out for each trial batch of concrete mix. Each test shall comprise six specimens and only one test set of six specimens shall be made on any particular day. Out of the six specimens of each set, three shall be tested at seven days and remaining three at 28 days. The preliminary tests

C=
I= } Nil AE(P) EE
O=

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 of 28 days. The design mix shall be considered satisfactory and approval if at least three preliminary tests- sets individually satisfy the following strength and workability criteria:

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

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

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

3.15 All cost of mix designing and testing connected therewith including charges payable to the laboratory shall be borne by the Contractor.

3.16 **WORK STRENGTH TEST:**

TEST SPECIMEN:
Work strength test shall be conducted in accordance with IS:516 on random sampling. Each test shall be conducted on six specimens, three of which shall be tested at 7 days and remaining three at 28 days.

TEST RESULTS OF SAMPLES:

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 variation is more, the test results shall be treated as invalid. 90% of the total tests shall be done at the laboratory established at site by the contractor and remaining 10% in the laboratory of IIT/NIT or in any other laboratory as directed by the Engineer-in-Charge.

LOT SIZE:

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

QUANTITY OF CONCRETE IN THE WORK (CUBIC METRE PER DAY).	NUMBER OF SAMPLES
1-5	1
6-15	2
16-30	3
31-50	4
51 & above	4 Plus one additional sample for each additional 50 cubic meters of part thereof

NOTE: - At least one sample shall be taken from each shift.

3.17 **STANDARD OF ACCEPTANCE:**

(i) In case the test results of all the samples are above the characteristic compressive strength, the concrete shall be accepted.

(ii) In case the test result of one or more samples fails to meet the requirement (i) above, it shall be accepted if both the following conditions are met:

C=
I=
O= } Nil AE(P) EE

a. Any individual test result is not less than (Fck - 4) N/mm2.

b. The mean of test results from any group of four consecutive samples is more than (Fck + 4) N/mm2.

(iii) Concrete of each grade shall be assessed separately.

(iv) Concrete is liable to be rejected, if it is porous or honeycombed, 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.

3.18 The contractor has to arrange at site sufficient centering and shuttering for before two months from stipulated date of start of work. Only MS 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 as approved by the Engineer-in-Charge.

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

3.20 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 RCC shall be accordingly adjusted at the time of its centering, shuttering and casting for which nothing extra shall be paid to the Contractor.

3.21 As per general engineering practice, level of floors in toilet / bath, balconies, shall be kept 25-50 mm as required lower than general floors shuttering should be adjusted accordingly and slabs should be laid with slope towards the drainage point. Nothing extra is payable on this account.

3.22 Contractor has to provide reinforcement cover blocks made of approved proprietary pre packed free flowing mortars (Conbextra as manufactured by M/s Fosroc Chemical India Ltd. or approved equivalent) of high early strength nothing extra shall be paid on this account.

3.23 **PRODUCTION OF CONCRETE**

All concrete shall be produced at site through Semi-automatic weigh-batching plant of suitable capacity (not less than 10 cum/hr.) conforming to IS:4925 with the arrangements for automatic dispensing of water and admixture and having facility of giving print out indicating weight / details of all ingredient of concrete in each lot/ batch and variations from the approved design mix if any. ~~Fully automatic batching and mixing plant having capacity not less than 30 cum/ hour shall be installed at the arranged site by the contractor.~~ The batching and mixing plants shall be dedicated plants for this project. Contractor shall make his own arrangements for the necessary infrastructure for installation of batching plant and other machineries. However, if due to any reason,

contractor wishes to supplement the concrete from Ready Mix Concrete (RMC) supplier, he is permitted to procure the same from the source approved by the Engineer-in-charge at his own cost. In such a situation nothing extra shall be paid to the contractor. All technical requirements such as cement type and minimum cement quantity, w/c ratio, slump, admixture etc. shall be conveyed to RMC supplier by the contractor and contractor shall be wholly responsible for ensuring the property of concrete as required at site, nothing extra shall be paid to the contractor.

The contractor may take some time to install his own batching plants at the arranged site and till the batching plants are installed, the contractor is permitted to procure concrete from approved Ready-Mix Concrete (RMC) supplier for a period of **02 months** from date of start of work or the period as agreed by Engineer-in-Charge. Similarly, when the work is nearing completion and daily requirement of concrete is very less, if agreed by the Engineer-in-Charge, the contractor may be permitted to procure the concrete from approved Ready-Mix Concrete (RMC) supplier and nothing extra shall be paid to the contractor on this account.

3.24 LAND FOR TEMPORARY USE

The land for labour camps & batching Plant shall be arranged by the contractor. The lease/rent charges shall be borne by the contractor. The Engineer-in-Charge shall extend necessary help and issue necessary recommendations etc. to the concerned clients / department for temporary allotment of land during construction period if land is available with them. In such cases, the contractor shall vacate the land after completion of work in same condition as was at the time of allotment.

3.25 BATCHING PLANT

The batching and mixing plant shall be Semi-automatic of suitable capacity not less than 10 cum/hour. Automatic batcher shall be charged by devices which when actuated by a individual/ separate starter switches will automatically start the weighing operation of each material and stop automatically when the designated weight of each material is fed in the mixer. The batching plant shall have automatic arrangement for dispensing the admixture and shall be capable of discharging water in more than one stage. A batching plant essentially shall consist of the following components:

- Separate storage bins for different sizes of aggregates, sand and cement, water storage tank.
- Batching equipment
- Mixers
- Control Panels
- Mechanical material feeding and elevating arrangements

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 water

C= I= O=	Nil	AE(P)	EE

tight and provided with necessary air vent, aeration fittings for proper flow of cement & emergency 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 be self-cleansing during draw-down. The batch bins shall in general conform to the requirements of IS:4925.

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 measuring devices shall fall within the following limits.

Measurement of Cement:	+ 2% of the quantity of cement in eachbatch
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

The batching and mixing plant shall have the provision of adjusting the plus / minus quantity of various ingredients in the next batch so that there is no variation in quantity of ingredients from design mix in a lot consisting of 5 to 6 batches.

The mixer in the batching plant shall be so arranged that mixing action in the mixer 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.

3.26 TRANSPORTATION, PLACING AND COMPACTION OF CONCRETE

Mixed concrete from the RMC / Batching plant shall be transported to the point of placement by transit mixers and placed in position through concrete pumps and/or steel closed bottom buckets capable of carrying minimum 0.6 cum concrete. In case the concrete is proposed to be transported by transit mixer, the mixing 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 70 m/minutes 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 revolution 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 requirement shall conform to IS:5892.

In case concrete is to be transported by pumping, the conduit shall be primed by pumping a batch of mortar 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

C= I= O=	Nil	AE(P)	EE

pump receiving hopper during operation. The lines shall always be maintained clean and shall be free of dents at all stages. Special precaution shall be taken that surrounding temperature during concreting shall not exceed 30 degree centigrade.

Except where otherwise agreed to by the Engineer-in-Charge, concrete shall be deposited in horizontal layers to a compacted depth of not more than 450 mm. Unless agreed to by the Engineer- in- Charge, concrete shall not be dropped into place from a height exceeding 1.5m. In order to avoid such situations chutes, tremie pipe or closed bottom buckets shall be used. These shall be kept clean and used in such a way as to avoid segregation. Slope of the chute shall be so adjusted that concrete flows without the use of excessive quantity of water. The delivery end of chute shall be as close as possible to the point of deposit. The chute shall be thoroughly flushed with water before and after each working period and the water used for this purpose shall be discharged outside the formwork. The concrete shall be compacted by using immersion type vibrators. When the concrete is being continuously deposited to a uniform depth along a member, vibrator shall not be operated within one meter of free end of the advancing concrete. Every effort shall be made to keep the surface of the previously placed layer of concrete alive so that the succeeding layer can be amalgamated with it by the vibration process. In case the concrete in underlying layer has hardened to such an extent that it cannot be penetrated by the vibrator but is still fresh (that is, just after initial set), un-imposed bond shall be achieved between the top and underlying layer by first scarifying the lower layer before the new concrete is placed by systematically and thoroughly vibrating the new concrete. The points of insertion of vibrator in the concrete shall be so spaced that the range of action overlap to some extent and the freshly filled concrete is sufficiently consolidated at all locations. The spacing between the dipping positions of vibrator shall be maintained uniformly throughout the surface of concrete so that concrete is uniformly vibrated. The vibrating head shall be regularly and uniformly inserted in the concrete so that it penetrates of its own accord and shall be withdrawn slowly whilst running so as to allow redistribution of concrete in its way and allow the concrete to flow back into the hole behind the vibrator. The vibrator head shall be kept in one position till the concrete within its influence is completely consolidated. Vibration shall be continued until the coarse aggregate particle have blended into the surface but have not disappeared. The contractor shall keep at least one additional vibrator in serviceable condition to be used in the event of breakdowns and maintenance problems.

The vibrator head shall not be brought more than 200 mm near to the formwork as this may cause formation of water stagnations. The formwork shall be strong and great care shall be exercised in its assembly. It shall be designed to take up increased pressure of concrete and pressure variations caused in the neighbourhood of vibrating head, which may result in excessive local stress on the formwork. The joints of the formwork shall be made and maintained tight and close enough to prevent the squeezing out slurry or sucking in of air during vibration. The formwork to receive concrete shall be cleaned

C= I= O=	Nil	AE(P)	EE

and made free from standing water, dust, etc. The contractor shall keep provision for screed and shutter vibrators at site.

No concrete shall be placed in any part of the structure until the approval of Engineer-in-Charge has been obtained. If concreting is not started within 24 hours of the approval being given, it shall have to be obtained again from the Engineer-in-Charge. Concreting shall be done continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joint is formed. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept, clean, thoroughly wetted and covered with a 13 mm thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. The 13 mm layer of mortar shall be freshly mixed and placed immediately before placing of new concrete.

Where concrete is not fully hardened, all latency shall be removed by scrubbing the wet surface with wire or bristle brushes. Care shall be taken to avoid dislodgement of particles of coarse aggregate. The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. Particular attention shall be given to corners and close spots.

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 on 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 the CPWD Specification- 2019.

4.0 SHUTTERING / FORM WORK/ REINFORCEMENT

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

4.2 Steel shuttering as approved by the Engineer-in-Charge shall be used by the contractor. Minimum size of shuttering plates shall be 600mm x 900mm except for the case when closing pieces required to complete the shuttering panels. Dented, broken, cracked, twisted or rusted shuttering plates shall not be allowed to be used on the work.

4.3 The shuttering plates shall be cleaned properly with electrically driven sanders to remove any cement slurry or cement mortar or rust. Proper shuttering oil or debonding compound shall be applied on the surface of the shutter plates in the requisite quantity before assembly of steel reinforcement.

C= I= O=	Nil	AE(P)	EE

4.4 The joint filler shall be resilient closed cell expanded polyethene and non-tainting as manufactured by Supreme Industries Ltd.

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

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

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

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

5.0 SCAFFOLDING

5.1 Double steel scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding planks shall be fixed. Nothing extra shall be paid on this account.

6.0 WOOD WORK

6.1 The wood work in general shall be carried out as per CPWD Specifications - 2019 Vol.I & II with upto date correction slips.

6.2 The samples of species of timber to be used shall be got approved and deposited by the contractor with the EE before commencement of the work. The contractor shall produce cash vouchers and certificates from kiln seasoning or/and chemical treatment plants about the timber section to be used on the work having been kiln seasoned or/and chemically treated by them.

6.3 Factory made shutter as specified shall be obtained from factories approved by the Engineer in charge. The contractor shall inform well in advance to the Engineer-in-charge the names and address of the factory from where the contractor intends to get the shutters manufactured. The contractor will place order for manufacture of shutters only after written approval of the Engineer-in-charge in this regard is given. The contractor is bound to abide by the decision of the Engineer-in-charge and recommend a name of another factory from the approved list in case the factory already proposed by the contractor is not found competent to manufacture quality shutters. Shutters will however be accepted only if this meet the specified tests. The contractor will also arrange stage wise inspection of the shutters at factory to the Engineer-in-charge or his authorized representative. Contractor will have no claim if the shutters brought at site are rejected by Engineer-in-charge in part or in full lot due to bad workmanship / quality even after inspection of factory. Such shutters will not be measured and paid and the contractor

C= I= O=	Nil	AE(P)	EE

shall remove the same from the site of work within 7 days after the written instruction in this regard are issued by Engineer in Charge or his authorized representative.

6.4 All fittings and fixtures shall be got approved from the Engineer-in Charge before procurement well in advance and the approved samples shall be kept at site till completion of the work.

6.5 Glazing for toilets shall be of translucent type.

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

7.0 FALSECEILING WORK

The luminaries, air grills / diffusers, signage's etc. shall be as far as possible independently supported to avoid any over loading of the ceiling system which may result in excessive deflection or twisting of grids. Any strengthening of grid system by providing additional hangers, fasteners, runners, cross tees etc. or providing additional bracing may be carried out as required for any specific locations or for specific purpose for which nothing extra shall be payable. Various false ceiling systems shall include cost of all inputs of labour, materials, wastage if any, T&P, scaffolding, staging or any other temporary enabling structure / services etc. and all other incidental charges including making necessary cut outs for A.C diffusers, Light fittings, grills, Fire detection, alarm, sprinklers devices and fittings etc. No deduction in the area shall be made for openings nor anything extra shall be payable for making the openings. Also nothing extra shall be payable on account of any wastage in materials. Also, nothing extra shall be payable on account of any strengthening of the supporting suspension system for the false ceiling, around the openings in the false ceiling by using additional hangers, fasteners, runners, cross tees, cross channels, etc.

8.0 FLOORING

8.1 All work in general shall be carried out as per CPWD Specifications- 2019 - Vol. I & Vol. II with upto date correction slips.

8.2 Whenever flooring is to be done in patterns tiles/ stone, the contractor shall get samples of each pattern laid and approved by the Engineer-in-Charge before final laying of such flooring for which nothing extra shall be paid.

8.3 Different stones/ tiles used in pattern flooring as per the approved architectural drawings and nothing extra for laying pattern flooring shall be paid. No additional wastage if any shall be accounted for any extra payment.

8.4 The rate of items of flooring is inclusive of providing sunken flooring in bathrooms, kitchen etc. and nothing extra on this account is admissible. The samples of flooring, dado & skirting as per approved pattern shall be prepared & got approved from the Engineer-in-charge before execution of work.

C=
I=
O= } Nil AE(P) EE

8.5 Nothing extra shall be payable for using combination of marble, granite and kota in the required pattern at various locations unless otherwise specified.

8.6 The pattern, spacing and locations of joints shall be as per drawings and direction of the Engineer-in-Charge and nothing extra shall be paid on account of the same.

8.7 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.

8.8 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.

8.9 The stone slabs used for providing and fixing in the sills, soffits and jambs of doors, windows, ventilators and similar locations shall be in single piece unless otherwise directed by the Engineer-in-Charge. Wherever stone slab other than in single piece is allowed to be fixed, the joints shall be provided as per the architectural drawings and as per the directions of the Engineer -in-Charge. In the cabin areas, the joints in sills shall preferably be provided in line with the partition wall. Depending on the number of joints, as far as possible, the stone slabs shall be procured and fixed in slabs of equal lengths as per the architectural drawings and as directed by Engineer in-Charge. **Nothing extra shall be paid on providing single piece stones in aforesaid location unless otherwise provided in the schedule of quantity.**

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

8.11 All holes, rebates, recesses etc. for providing fixing and inserts shall be predrilled and precut and worked using precision machine tools. Nothing extra on this account shall be payable.

8.12 One-piece Granite stone for treads / risers in steps and staircase shall be used and nothing extra shall be paid on this account.

8.13 All corner joints of tiles/stone in dado shall be made by chamfering the edges of tiles to 45 degree to produce a fine mitred joint and filling same with matching grout. Nothing extra shall be paid on this account.

9.0 STAINLESS STEEL RAILING/HANDRAILS:

9.1 GENERAL: The contractor shall apply all materials, labour, tools, ladders, scaffolding and other equipment necessary for the completion and protection of all stainless-steel work.

C= I= O=	Nil	AE(P)	EE

9.2 MATERIAL: All stainless-steel pipes and plates shall conform to AISI 316/304 grade and the relevant clauses associated with this grade of steel to be followed.

9.3 SURFACE FINISH: Surface finish of all the stainless-steel materials will be in 240 grit satin finish / matt finish.

9.4 ACCESSORIES: Fixing will be done by stainless steel expansion bolts of approved size and make as per Engineer-in-charge and welding to be done by using organ welding rods and the surface being duly finished and cleaned by K2 passivation, which is nitric acid plus fluoric acid solution treatment by which the chances of corrosion will be eliminated and any burn out makes on the metal will also be eliminated.

9.5 COATING MASS: All stainless-steel material will have to be coated by a solution of Inbox to avoid finger in prints and avoidance of settlement of environment / atmospheric dust.

10.0 WATER PROOFING TREATMENT

10.1 Work shall be executed as per CPWD Specifications, 2019 Vol I & II with upto date correction slips.

10.2 The contractor shall associate himself with the specialized firm, to be approved by the Engineer-in-charge in writing, for water proofing treatment for basement/lower ground floor, underground tank and on roofs.

10.3 The brick bats shall be from over burnt bricks. The water proofing compound used in integral water proofing treatment shall satisfy all the performance requirements indicated in IS:2645 and shall be got tested before its use. The compound shall be used @ 2% by weight of cement used or as recommended by the manufacturer.

10.4 Total quantity of the water proofing compound required shall be arranged only after obtaining the prior approved of the 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.

10.5 The finished surface after water proofing treatment for roof slab shall have smooth slope with minimum gradient of 1 in 80.

10.6 Before commencement of treatment on roof surface, it shall be ensured that the outlet drain pipes/ spouts have been fixed and the spout opening have been eased and rounded off properly for easy flow of water.

10.7 The surface where the water proofing is to be done shall be thoroughly cleaned with wire brushes. All loose scales mortar splashes etc. shall be removed and dusted off. The surface shall be treated with neat cement slurry admixed with proprietary water proof compound to penetrate into crevices and fill up all the pores in the surface.

10.8 This cement slurry shall be applied at the junction of parapet and terrace slab including the vertical face of the parapet.

C=
I= } Nil AE(P) EE
O=

10.9 After the slurry coat is laid, layer of over burnt brick bats shall be laid in cement mortar of mix as specified by specialist firm but not leaner than 1:5 (1 cement : 5 coarse sand) admixed with proprietary water proofing compound to required gradient and joints filled to half the depth. The bricks bat layer shall be rounded at the junction with the parapet and tapered towards top for a height of 300mm. Curing of this layer shall be done for 2 days.

10.10 After curing the surfaces shall be applied with a coat of cement slurry admixed with proprietary water proofing compound.

10.11 Joints of bricks bat layer shall be filled fully with cement mortar of mix as specified by the specialist firm but not leaner than 1:5 (1 cement : 5 coarse sand) admixed with proprietary water proofing compound and finally top finished with average 20 mm thick layers of cement mortar 1:4 (1 cement : 4 coarse sand) and finished smooth with cement slurry mixed with proprietary water proofing compound. The finished surface shall have marking of 300x300 mm false squares to give the appearance of tiles.

10.12 Curing of water proofing treatment shall be done for a minimum period of two weeks by flooding the water by making compartments etc.

10.13 **GUARANTEE:**

The water proofing work shall carry Ten Years guarantee to be reckoned from the date of completion of the entire work under the contract against faulty workmanship, finishing, unsound materials, efficiency of water proofing treatment and other related problems.

Ten Years Guarantee bond in prescribed Performa attached herewith as **Annexure-II** 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 main contractor.

In addition Ten percent (10%) of the cost of water proofing work shall be retained as security deposit and the amount so withheld would be released after ten years from the date of completion of the entire work under the contract, if the performance of the work done is found satisfactory. However, half of this retained amount is released after 5 years, if the performance of the work is found satisfactory. If any defect is noticed during the guarantee period, it shall be rectified by the contractor within seven 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.

Further, the security deposit so deducted may be released in full against FDR/ bank guarantee of equivalent amount in favour of Engineer in charge, if so decided by the Engineer in charge.

The Security deposit against this item of work shall be in addition to the security deposit mentioned elsewhere in contract form.

C=
I= } Nil AE(P) EE
O=

11.0 SPECIFICATIONS FOR ALUMINIUM DOOR, WINDOW, VENTILATOR WORKS:

11.1 Extent and Intent:

11.1.1 The work shall be carried out through an approved specialized agency, who shall furnish all materials, labour, accessories, equipment, tool and plant and incidentals required for providing and installing aluminum doors, windows, claddings, louvers and other items as called for on the drawings. The specialized agency for the Aluminium work shall be got approved from the Engineer-in-charge, well before actual commencement of the item of work. Necessary performance certificates in respect of agencies proposed to be engaged shall be submitted within 30 days from the date of issue of acceptance letter to substantiate technical capability and experience of the agency for prior approval of the Engineer-in-charge.

11.1.2 The drawings and specifications cover the major requirement only. The supplying of additional fastenings, accessory features and other items not mentioned specifically herein, but which are necessary to make a complete installation shall be a part of this contract.

11.2 **General:**

11.2.1 Work shall be carried out as per CPWD Specifications- 2019 Vol.I & Vol.II with upto date correction slips.

11.2.2 Aluminium doors, windows etc. shall be of sizes, section details as shown on the drawings. The details shown on the drawings indicate generally the sizes of the components parts and general standards. These may be varied slightly to suit the standard adopted by the manufacturer. Before proceeding with any manufacturing, the contractor shall prepare and submit complete manufacturing and installation drawings for approval of the Engineer-in-Charge and no work shall be performed until the approval of these drawings is obtained.

11.3 **Shop Drawings:**

The contractor shall submit the shop drawings of doors. Windows, louvers, cladding and other aluminium work, based on architectural drawings, to the Engineer-in-Charge for his approval. The drawings shall show full size sections of doors, windows etc. thickness of metal (i.e. wall thickness), details of construction, sub frame/ rough ground profile, anchoring details, hardware as well as connection of windows, doors and other metal work to adjacent work. Samples of all joints and methods of fastening and joining shall be submitted to the Engineer-in-Charge for approval well in advance of commencing the work.

C= I= O=	Nil	AE(P)	EE

11.4 **Samples:**

Samples of doors, windows, louvers etc. shall be fabricated, assembled and submitted to the Engineer-in-Charge for his approval. They shall be of sizes types etc. as decided by Engineer-in-Charge. All samples shall be provided at the cost of the contractor.

11.5 **Sections:**

Minimum doors and windows shall be fabricated from extruded section of profile of detailed on drawings. The sections shall be extruded by the manufacturers approved by the Engineer-in-charge. The aluminium extruded sections shall conform IS designation 63400-WP (HV9WP Old designation) with chemical composition and technical properties as per IS:733 and IS:1285. The permissible dimensional tolerance of the extruded sections shall be such as not to impair the proper and smooth function/ operation and appearance of doors and windows.

11.6 **Fabrication:**

Doors, windows, etc. shall be fabricated to sizes as shown at factory and shall be of section, sizes combinations and details as shown in the Architectural Drawings. However, NIT approving authority on the recommendation of Engineer-in-charge may allow the site fabrication under unavoidable/ peculiar instances. All doors, windows etc. shall have mechanical joints. All members shall be accurately machined and fitted to form hairline joints prior to assembly. The joint and accessories such as cleats, brackets, etc. shall be of such materials as not to cause any bimetallic action. The fabrication of doors, windows, etc. shall be done in suitable sections to facilitate easy transportation, handling and installation. Adequate provision shall be made in the door and window members for anchoring to support and fixing of hardware and other fixtures as approved by the Engineer-in-Charge.

11.7 **Handling and stacking**:

11.7.1 Fabricated materials shall be stacking in an approved manner to protect the material against any damage during transportation. The loading and unloading shall be carried out with utmost care, on receipt of materials at site, they shall be carefully examined to detect any damaged pieces. Arrangements shall be made for expeditious replacement of damaged piece/ parts. Materials found to be acceptable on inspections shall be repacked in crates and stored safely.

11.7.2 In the case of Composite windows and doors, the different units are to be assembled first. The assembled Composite units should be checked for line, level and plumb before final fixing is done. Units may be serial numbered and identified as how to be assembled in their final location of situation so warrants.

11.7.3 Where aluminum comes into contact with masonry brickwork, concrete, planter or dissimilar metals, it shall be coated with approved insulation lacquer, paint or

plastic tape to ensure that electro- chemical corrosion is avoided. Insulation material shall be trimmed off to a clean flush line on completion.

11.7.4 The contractor shall be responsible for assembling Composite, bedding and filling the groove with backup roads polysulphide sealant inside and outside, placing the doors, windows etc. in their respective opening. After the doors/ windows have been fixed in their correct assigned position, the open hollow sections abutting masonry concrete shall be fitted with approved polysulphide sealant densely packed and neatly finished.

11.7.5 The contractor shall be responsible for doors, windows, etc. being set straight plumb, level and for their satisfactory operation after fixing is complete.

11.8 **Installation**

11.8.1 Just prior to installation the doors, windows etc. shall be uncreated and stacked on edge on level bearers and supported evenly. The frame shall be fixed into position true to line and level using adequate number of expansion machine bolts, anchor fasteners of approved size and manufacturer and in an approved manner. The holes in concrete/ masonry members for housing anchor bolts shall be drilled with an electric drill.

11.8.2 The doors, windows assembled as shown on drawings shall be placed in correct final position in this opening and marks made on concrete members at jambs, sills and heads against the holes provided in frames for anchoring. The frame shall then be removed from the opening and laid aside. Neat hole with parallel sides of appropriate size shall then be drilled in the concrete members with an electric drill at the marking to house the expansion bolts. The expansion bolts shall then be inserted in the holes, struck with a light hammer till the nuts is forced into the anchor shell. The frame shall then be placed in final position in the opening and anchored to the support through cadmium plated machine screws of required size threaded to expansion bolts. The frame shall be set in the opening by using wooden wedges at supported and bar plumbed in position. The wedges shall invariably be placed at meeting points of glazing bars and frames.

11.9 Protection & Cleaning: The contractor shall adequately protect all components and accessories from damage during shipments, storage at job site, erection and after completion of the work. At such time as may be directed, the sub-contractor shall remove all protective tapes or coating, thoroughly clean all anodized aluminum and glass surfaces with suitable cleaning agent, make final adjustments to all ventilators, etc. and hardware leaving all in first class working order.

11.10 **Details of Tests**

11.10.1 The minimum number of tests for powder coating and corrosion resistance shall be as given below:

C= I= O=	Nil	AE(P)	EE

S. No.	Details	No. of Tests
1	Doors, Windows & Ventilators	One test for every 1000 kg or part thereof but at least one test for each type of section used

11.10.2 The samples of major member of each unit of doors/ windows shall be selected at random by Engineer-in-Charge as such that all the aluminium section be got tested.

11.10.3 The cost of samples, carriage or the samples and testing charges, if any, shall be borne by the contractor.

12.0 SANITARY INSTALLATIONS, WATER SUPPLY AND DRAINAGE

12.1 The scope of work comprises supply, laying, installation, commissioning and testing of water supply, sewerage and drainage works including sanitary fixtures and fittings. These works shall be executed as per the specifications of items attached and CPWD specifications- 2019 Vol. I & II with up-to-date correction slips up to the date of tender submission.

12.2 The work of water supply and sanitary installations shall be got executed by the agency as approved by Engineer-in-Charge.

(i) The entire plumbing drawing and sanitary installation drawing/ details shall be submitted by the contractor and got approved by the Engineer-in-Charge before the execution.

(ii) The entire responsibility for the quality of work will however rest with the building contractor only.

12.3 The work of water supply, internal sanitary installations and drainage etc. shall be carried out as per the bylaws of the Municipal Corporation or any other local body and the contractor shall produce necessary completion certificates from such authority after completion of work.

12.4 All water tanks, taps, sanitary, water supply and drainage pipes fittings and accessories etc. shall conform to the bylaws and specifications of the Municipal Body/Corporation where CPWD specifications are not available.

12.5 The contractor shall engage licensed plumbers for the work and the materials (fixtures/fittings) tested by the local Municipal Body/Corporation wherever required at his own cost. Nothing extra shall be paid/reimbursed for the same.

12.6 All sanitary wares and fittings shall conform to IS standards and to be procured from approved makes. The contractor shall submit samples of all fittings and fixtures proposed to be used to the Engineer-in-charge for his approval. The approved samples shall remain with the Engineer-in-charge till the completion of the work.

C=
I=
O= } Nil AE(P) EE

12.7 P or S and floor traps (long arm upto90 cm length or more) in WCs shall be of deep seal type of RIF make or equivalent and shall have a minimum water seal of 75 mm. Floor traps (long arm upto90 cm length or more) shall have a minimum water seal of 50 mm.

12.8 The pig lead to be used in jointing 100 mm, 75mm, 50 mm SCI pipe joints shall not be less than 0.98 kg, 0.88 kg and 0.77kg per joint respectively. A variation of 5% is allowed on higher side. However, in case of variation on lower side, the quantity of pig lead less used shall be recovered from the contractor at market rate to be determined by the Engineer-in-Charge whose decision in the matter shall be final.

12.9 All fixtures and accessories shall be fixed in accordance with a set pattern matching the tiles or interior finish as per architectural requirements. Wherever necessary the fittings centered to dimensions and pattern desired.

12.10 The rates shall include the cost of cutting chases, holes in walls, floors, RCC slabs etc. Wherever required and making good the same for which nothing extra shall be paid.The work in general shall be carried out as per CPWD specifications.

12.11 The piping stack shall be installed at least 50mm using MS brackets, away from the finished / plastered shaft wall. The Item of Brackets and Clamps shall be paid for separately. From floor traps to outside CI fittings only single piece connection pipe shall be used.

12.12 All vertical Sanitary & water supply pipes shall be fixed to pre primered and pre painted M.S supporting frame with “U” shaped G.I bolts, threaded at both ends, as specified, with GI nuts, GI washers, GI cleats etc. as approved by the Engineer-in-charge. Supporting frame shall be fixed with approved anchor fasteners / plumbing nails as directed by the Engineer-in-charge. In all cases, pipelines shall be fixed, minimum 50 mm away from the finished wall face and shall not be fixed directly to the walls. The cost of providing and fixing GI supporting frame, “U” bolts, GI nuts, GI washer, anchor fastener etc., for clamping the pipes to the supporting frame shall be paid for separately under relevant item.

12.13 Rate includes all materials, labour and all the operations mentioned in the respective items unless and otherwise specifically mentioned.

12.14 The SCI pipe wherever necessary shall be fixed to RCC columns, beams etc. with rawl plugs of approved quality and nothing extra shall paid for on this account.

12.15 All the works shall be completely concealed either within shafts or chases or in fills and dropped ceilings, unless specifically shown in drawings or required otherwise.

12.16 All the works shall be adequate protected against corrosion, so that the whole work is free from damage throughout.

12.17 The contractor shall give a performance test of the entire installation(s) as per standing specifications before the work is finally accepted by making his own arrangements for water supply, electricity etc. and nothing extra whatsoever shall be payable for the same.

C= I= O=	Nil	AE(P)	EE

12.18 The contractor shall be responsible for all the protection of sanitary, water supply fittings and fixtures against pilferage and breakage during the period of installation until the completion / handing over of the work.

12.19 The CP fittings such as pillar cock, angle valve, bib cock, mixers etc. shall all be quarter turn type. All such CP fittings fixed on the wall such as angle valve, bib cock, mixers shall be provided with flanges. Nothing extra shall be paid on these accounts even if it specifically not mentioned in the schedule of quantities for the work.

12.20 The CP fittings and sanitary fixtures to be installed in **Residential Qtrs.** shall be of approved makes of economical series as mentioned in approved make list.

12.21 Before the work is handed over, the contractor shall clean all fixtures removing all plaster, stickers, rust stains and other foreign matter, leaving every part in acceptable condition and ready for use to the satisfaction of the Engineer-in-charge.

12.22 The contractor shall submit completion plans for water supply internal sanitary installations and building drainage work within thirty days of the date of completion. These plans are to be submitted on drawings prepared preferably through computers (1 original copy + 3 photocopies) on suitable scales to show the general arrangement and desired details.

12.23 **INSPECTION AND TESTING**

Inspection and testing of water supply sewerage and drainage installations shall be carried out as per National Building Code 2016 with up to date amendments.

13.0 PRECAST CEMENT CONCRETE BLOCKS

Machine moulded precast cement concrete blocks of mix 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate of nominal size 20mm) shall conform to CPWD Specification volume-I 2019 with upto date correction slips as applicable to cement concrete work (chapter-IV). These precast cement concrete solid blocks shall be manufactured & tested as per IS 2185 (Part-1): 2005. The 28 days compressive strength of these solid concrete blocks shall be 10 N/mm^2. All other parameters including physical requirements thereof except compressive strength as aforesaid shall conform to IS 2185 (Part-1): 2005.

14.0 STRUCTURAL STEEL WORK

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

14.2 Factory made glazed Steel Doors, Windows &Ventilators shall be manufactured in a workshop approved by the Engineer-in-charge.

14.3 Contractor shall submit the shop drawings for the trusses and other structural steel frames for the approval of Engineer-in-charge as laid down in the Additional Condition of the contract.

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

14.5 The installation and erection of trusses and other steel structural members is to be done as per the approved drawings. The agreement item for steel work shall be applicable for

C= I= O=	Nil	AE(P)	EE

all heights and leads and any claim for fabrication and erection at such height shall not be entertained.

14.6 The contractor shall have to deploy required T&P such as crane, hydra, winches etc. for erection and nothing extra shall be paid on this account.

15.0 SMC Tanks

15.1 Hot compressed moulded SMC (sheet moulding compound) Panel tanks shall be as per IS: 14399 Part-I & 1996 Part-II. The detailed shop drawings of the tank shall be prepared by the approved manufacturer and submitted by the contractor for approval. The panel should withstand hydrostatic pressure of at least 4 times the working load.

15.2 Tank shall be erected on steel base/grillage (the design and drawings shall be provided by manufacturer) which shall be placed on RCC columns at site/ terrace as per manufacturer's specification & design. The drawings of grillage structure shall also include the sizes of all the MS members. The work of grillage structure shall be executed by the contractor based upon such approved drawings and shall be paid for separately. If the height of tank is more than 1m, side/vertical grillage shall be provided and the cost of which shall be inclusive in the rate.

15.3 The base, sidewall and roof top SMC panels shall be of modular size such as 1m x 1m, 0.5m x 1m, 0.5m x 0.5m, 1m x 2m etc. All the panels of tank must be printed with ISI Marked with BIS certificate Number, CML Number, Batch Number with type of Panels as per IS 14399:1996 part I & II. All panels Top, Bottom & Corners must be firmly joined with using predrilled SMC corner Angles 75mm x 75mm.

15.4 One manhole of diameter 600mm shall be provided on the roof of tank with lockable lid. All the metal accessories shall be of SS 316 and must be as per BIS standard. The tank shall be provided with HDG/Olive green nuts bolts, food grade foam gasket, cover washer, cleats, including PVC/FRP support for the roof top panels.

15.5 FRP ladder of approved design and height shall be provided inside and outside tank.

15.6 Provision of holes for inlet and outlet, overflow, scour etc. shall be made as per direction of Engineer-in-charge. In case fire tank is also to be provided, provision for the necessary partition or provision for fixed bottom capacity with separate outlets for fire and domestic use at different levels shall be made.

15.7 The erection of tank shall be done by the manufacturer or his authorised vendor only.

15.8 Warranty: The manufacturer shall extend warrantee on the various components going into assembly of SMC Panel Tank for a period of 12 Months from the completion of the contract against manufacturing defects. Contractor shall have to arrange and submit the warrantee at the time of completion of work. If any material defect is found, the same will have to be replaced free of cost within warrantee period.

15.9 Measurement: The mode of measurement shall be in litres and the internal dimension of the tank shall be measured correct to mm for calculation of internal volume. The payment against the item shall include all the material and operations, whether described above or not, but is essential for satisfactory functioning of the tank, however excluding bottom grillage structure.

C=
I= } Nil AE(P) EE
O=

16.0 GPSP sheet Door Shutters and Frames

16.1 The door frame and shutter shall be made of Galvanised Plain Skin Pass (GPSP) sheets conforming to IS 277: 1992. The frame shall be of 1.2 mm thick GPSP sheet with the infill of Puff. The frames shall conform to IS IS 4351:2003. The door shutter shall be of 0.8 mm thick GPSP sheets with the infill of honeycomb craft fiber.

16.2 The detailed shop drawings of the door frame and shutter shall be prepared by the approved manufacturer/ make showing all the accessories, grill etc. and submitted by the contractor for approval. Fabrication shall be done with CNC cutting machine and all the joints shall be hair joints.

16.3 Powder coating of make Jotun/ Akzo Nobel or equivalent and of approved colour having thickness 60-80 micron shall be made on frame, shutter and grill.

16.4 The top and bottom panels shall be provided with SS 304 wire mesh and MS grill. The grill shall be provided with 10 mm square bars and its pattern shall be as per approved shop drawing. The grill shall also be powder coated as mentioned above.

16.5 The accessories viz. ball bearing hinges, L-drop, tower bolt, handles, door stopper shall be SS-304 of make Dorset, Kich or Godrej and shall be approved by Engineer-in-Charge.

16.6 In case, it is decided to provide concealed door closer (to be paid separately), necessary slot/ cutting shall be provided during the fabrication itself.

16.7 The installation of entire assembly shall be done by the manufacturer or his authorised vendor only.

16.8 Warranty: The manufacturer shall extend warrantee on the entire door frame and shutter against any manufacturing defect, colour fading for a period of 12 Months from the completion of the contract against manufacturing defects. Contractor shall have to arrange and submit the warrantee at the time of completion of work. If any material defect is found, the same will have to be replaced free of cost within warrantee period.

16.9 Measurement: The mode of measurement shall be in sqm and the outer to outer dimension of the frame shall be measured correct to mm for calculation of area. The payment against the item shall include all the material and operations, whether described above or not, but are essential for satisfactory functioning of the shutter-frame assembly.

17.0 UPVC Windows

17.1 The work of UPVC windows shall be executed as per the applicable CPWD specification.

17.2 The contractor shall submit the name of the fabricator along with his authorisation from the approved make/ manufacturer of the UPVC section for the approval by Engineer-in-Charge. The contractor shall also submit the sample of sections likely to be used along with the reinforcement.

17.3 The detailed shop drawings of the windows shall be prepared by the approved fabricator showing all the sections and accessories etc. and submitted by the contractor for approval.

C=
I= } Nil AE(P) EE
O=

17.4 In case the width of a glazed/ wire mesh shutter panel is greater than 750 mm, an additional vertical mullion at the centre of the shutter panel shall be provided. The payment for this additional section shall be made in running meter.

17.5 Testing (if total quantity of UPVC windows is more than 40sqm) : In order to verify that the actual reinforcement provided in the section, one or more window shall be randomly selected and cut at different places. The contractor shall have to get the window replaced for which nothing extra shall be paid. The UPVC extruded hollow profile may also be got tested by Engineer-in-charge for various parameters including Titanium dioxide and calcium carbonate with acceptable values mentioned in the applicable CPWD specification. The cost of such test shall borne by the contractor.

17.6 Warrantee: The manufacturer/ fabricator shall extend warrantee on UPVC Sections against any colour fastness, manufacturing defect, improper installation, defects during operation etc. for a period of 10 Years from the completion of the contract. Contractor shall have to arrange and submit the warrantee at the time of completion of work. If any material defect is found, the same will have to be replaced free of cost within warrantee period. Similar warrantee shall be extended for accessories for a period of 12 Months from the completion of the contract.

18.0 SPECIALISED ITEMS

18.1 List of Specialized Items has been provided in Annexure-6 of Standard Operating Procedure for CPWD Works Manual 2024.

18.2 **PROCEDURE FOR EXECUTION OF THE SPECIALIZED ITEMS:**

Such items should be got executed only through associated agencies specialized in these fields. The contractor shall indicate the name(s) of his associated specialized agencies those fulfilling the eligibility conditions as early as possible and within one month of award of work to Engineer-in-Charge for approval of competent authority.

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

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

For specialized items, the main contractor cannot work as a specialized agency unless his name is already included in the list of approved specialized agencies for these items. The

C= I= O=	Nil	AE(P)	EE

contractor shall get these items executed through the specialized agencies as approved by competent authority.

18.3 **ELIGIBILITY CONDITIONS FOR APPROVAL OF SPECIALIZED AGENCIES:**

The Contractor(s) shall submit his proposal for the approval of the Engineer-in-Charge, the names of specialized agencies of repute along with their technical capability /experience proposed to be engaged by him. The agency must be currently actively engaged in execution of the said specialized item and must have who have satisfactorily executed similar work during last 5 (Five) years as below:

(i) Three works each of value not less than 40% of corresponding cost of the specialized item

or

(ii) Two works each of value not less than 60% of corresponding cost of the specialized item

or

(iii) One work of value not less than 80% of corresponding cost of the specialized item

For calculation purpose only, cost of the specialized item as per accepted tendered value of the all the items corresponding to the specialized item under consideration.

19.0 LIST OF APPROVED MAKES OF MATERIALS

Approved makes of materials to be used in the work are as given in the table enclosed. In case of non-availability of these makes, the Engineer-in-charge may allow use of alternative makes. Only BIS marked materials shall be used in the work. Non-BIS marked materials may be permitted by the Engineer-in-charge only when BIS marked materials are not manufactured.

C=
I=
O= } Nil AE(P) EE

LIST OF MACHINERY, TOOLS & PLANTS TO BE DEPLOYED BY THE CONTRACTOR AT SITE AS & WHEN REQUIRED

Sl. No.	Name of Equipment	Numbers
1	Excavators (various sizes)	1 No
	Equipment for hoisting & lifting	
1	Tower Crane or Builder's hoist (Desirable)	1 No
2	Crane/hydra for lifting for truss	1 No
	Equipment for Concrete work	
1	Semi-Automatic batching plant of capacity no less than 10 Cum/Hrs. or RMC from the approved plant	1 No
2	Concrete pump	1 No
3	Concrete transit mixer (Desirable)	1 No
4	Concrete mixer (diesel)/ (electrical)	1 No
5	Needle vibrator (electrical)	2 Nos.
6	Needle vibrator (petrol)	2 Nos.
7	Surface vibrator	2 Nos.
	Equipment for Building work	
1	Bar bending Machine	1 No
2	Bar cutting machine	1 No
3	Drilling machine	1 No
4	Welding machine i/c transformer	1 No
5	Cube testing machines (Automatic type with Electronic Display)	1 No
7	Steel shuttering & props and pipes for Structural work	1000 sqm plan area
8	Steel scaffolding for plaster, brick work & finishing work etc.	1000 sqm of elevation area
9	Grinding/polishing machines	1 No
	Equipment for transportation	
1	Tippers/Tractor tipper	1 No
2	Trucks	1 No
	Pneumatic equipment	
1	Air compressors (diesel)	1 No
	Dewatering equipment	
1	Pump (diesel)	1 No
2	Pump (electric) (Desirable)	1 No
	Power equipment	
1	Diesel generator	1 No
2	Plate compactor	1 No

Note: 1. The above list is only indicative and not exhaustive. The Bidder may be required to deploy more T&P as per requirement of work.

2. All the above plants &equipments are to be deployed as and when required or directed by Engineer-in-Charge.

C=
I=
O= } Nil AE(P) EE

LIST OF PREFERRED MAKES FOR CIVIL WORKS

Sl. No.	Material description	Approved Manufacturer / Brand Name
	RCC Work	
1	Ordinary Portland Cement/ Portland Pozzolana Cement	ACC, Ultratech, Ambuja Cement, J.K. Cement
2	White Cement	Birla White, J.K. White
3	Reinforcement Steel	SAIL, Tata Steel Ltd, RINL, JSW Steel Ltd.
4	Admixtures, Plasticizer, Super Plasticizer, Curing Compounds	Fosroc, CICO, Sika, BASF, Ardex Endura
5	Modular Expansion Joint	Herculus, Sanfield India Ltd. Vexcolt, MNR, CS
6	Ready Mix Concrete (RMC)	Ultratech, RMC Ready Mix (India)
	Structural Steel Work	
7	Structural Steel	SAIL, Tata Steel, Rashtriya Ispat Nigam Ltd. (RINL), JSW Steel Ltd. and Jindal Steel & Power Ltd.
8	M.S. tubular windows	Jangid Engineering, AGFUV, SEN HARVIC, NAVAIR Delhi, SUKRITI Delhi, Chandni industries, or as approved by E-I-C.
9	Pressed steel door frame	Bhawani fire Ghaziabad (UP) any other manufacturer as approved by Engineer-in-Charge
10	GPSP Door frame & Shutters	Tata Pravesh, Shakti Hormann, Home's Guard
11	MS Tubular door frames	Apollo, as approved by Engineer-in-Charge
	Block Work	
12	AAC Blocks	Ultratech, HIL, BILTECH or any other ISI marked as approved by E-I-C.
13	AAC Block Adhesive	UltraTech, Ardex Endura, Ferrous Crete
	Roofing Work	
14	Profile Steel Sheet (PPGL)	Ezydec of TATA, JSW Steel Ltd., Jindal Steel & Power Ltd.
15	Sandwich Insulated Panel	Kingspan, Metecno India
16	Polycarbonate sheet	GE Plastic, LEXAN, DPI Daylighting,
	Water proofing	
17	Integral Water Proofing compound with cement (For Plaster & Mortar)	Fosroc : Conplast 421, Dr. Fixit : LW+, Sika : Sikacin, Ultratech weather Pro WP+200 Asian Paints : Smart care vitalia & equivalent product of BASF, CICO, Birla Opus
18	Water proofing for bathroom/toilet/ balcony & other wet areas	Fosroc : Brush Bond Dr. Fixit : Pidifine 2K Sika : Nito Bond Asian Paints : Damp Block 2K, MYK Arment: AquaArm Saniflex & equivalent product of BASF, CICO, Ardex Endura, Ultratech weather Pro HI-FLEX, Birla Opus C2K, C2K+

C=
I= } Nil AE(P) EE
O=

19	Crystalline water proofing compound	Fosroc : Fosroc Crystalline Dr. Fixit : Dr. Fixit Crystalline Sika : Sika Crystalline Asian Paints: Crystalline Quarty , MYK Arment: AquaArm C-35 & equivalent product of BASF
20	HDPE/SBS membrane	Fosroc, Pidilite, BASF, MYK Arment
	Flooring	
21	Ceramic Tiles (Antiskid/Matte/Glazed	Kajaria, RAK, Somany, NITCO, Johnson
22	Vitrified Tiles (Antiskid/Matt/Glazed)	Kajaria, RAK, Somany, NITCO, Johnson
23	Mosaic tiles/Chequered Tiles	Ultra Tiles, NITCO, Kajaria, Johnson
24	Grouts, Tile Adhesive	Latecrete, BASF, Roff (Pidilite), Ultratech TILEFLXO
25	Vinyl flooring	Armstrong/Forbo/Polyflor or approved equivalent make
	Wood Work	
26	Flush door shutters	Duro, Merino, Century, Durian, Green Ply (Only ISI marked flush doors shutters to be used.)
27	Particle Board	Kitply, Greenlam, Merino.
28	WPC (Wood Polymer Composite) board, Frame Shutter	ALSTONE, GREEN PLY, RAJSHRI, Plasto Green
29	Laminated Particle Board	Greenlam, Century Ply, Merino
30	Laminates	Greenlam, Century Ply, Merino
31	Plywood	Green Ply, Century, Merino, Duro, Durian.
32	Natural veneer	Century, Green Ply, Merino, Greenlam
33	PVC Shutter	Rajshri, M/s Jain Wood Industries , Plasto Green
34	Block Board	Jayna, Orion Doors (Modern Wudtech Industries), Archidply, Green Panel
35	FRP Doors/Panelled & Wiremesh doors	Jayna, Jain Doors Pvt. Ltd., Bhatt FRP
36	Bamboowood Panel door, Flush door, cupboard shutter	Epitome Bamboo wood products (Mutha Industries Pvt. Ltd.) or approved equivalent make
	Fire doors	
37	Fire Rated Doors	Signum Fire Protection, Shakti Hormann, NAVAIR, Promat International, TATA Pravesh
38	Fire door Accessories	Yale, AssaAbloy, Ozone, Dorma, Shakti Hormann
	False Ceiling & Wall paneling	
39	False Ceiling suspension Grid	Armstrong, Hunter Douglas, Bollard, USG Boral, Saint Gobain, Aerolite, Diamond Ceiling, Tranquil
40	False Ceiling tiles (GRG tiles, Calcium silicate tiles, Mineral fiber tiles)	Armstrong, Hunter Douglas, USG Boral, Saint Gobain, Aerolite, Diamond Ceiling, Tranquil
41	Gypsum Board	Gyproc (Saint Gobain), USG Boral,
42	Glass Wool	Dow Corning, U.P. Twiga, Isover, Tranquil

C=
I=
O= } Nil AE(P) EE

43	Acoustic Wall paneling	KNAUF (Armstrong), Anutone, Bollard, Saint Gobain, Arolite, Tranquil
44	Cement bonded wood particle board	Bison (NCL), Birla aerocon
	Aluminium/ uPVC Doors & Windows	
45	Aluminium Section	Hindalco, Jindal, Indian Aluminium Co.
46	UPVC Doors & Windows (PROFILE makers & their authorized Fabcicators only)	Fenesta, KOMERLING, Aluplast, Duroplast, Prominence, Encraft , Advika Fenster
	Hardware (Doors, Windows, Cupboard, Kitchen)	
47	Anodised Aluminium Hardware (Heavy Duty)	Kinlong, Alualpha, Classic, Ebco
48	Aluminium sliding door roller etc.	TPI, Classic or equivalent
49	Hardware for uPVC Windows	Rotto, Dorset, Kinlong, Fenesta
50	Floor Spring	Godrej, Dorma, Hafele, Geze, DORSET, KICH
51	Door Closure	Godrej, Dorma, Hafele, Geze, DORSET, KICH
52	Stainless steel Fittings	Jindal, Dorma, Dorset, Godrej, Ozone, KICH, ARCH
53	Dash/Anchoring Fasteners	HILTI, Fischer, Bosch, Wurth
54	SS 304 Grade Kitchen Baskets	Godrej, Ebco, Hettick
	Glass	
55	Clear/Float/Frosted/Reflective/ Coated Glass	Saint Gobain, AIS, Modiguard, Gold Plus, Sisecam Flat Glass
	Facade work	
56	Aluminium Composite Panel	Alstone, VIRGO, EUROBOUND, ALUTUFF, VIVA, REYNOARCH, ALEX, ALUTECH.
57	Aluminium High Pressure Composite Panel	VIRGO, ALUTUFF, VIVA, Timex.
58	Structural Glazing	Schueco India Pvt. Ltd./Wicona / Guttmann or approved equivalent
59	Curtain Glazing	Hindalco, Jindal, Indal
60	Patch fittings/spider fitting	Godrej Dorma, Kich, Dorset, Hafele
61	High Pressure Laminate	Virgo, Marino, Century ply, Greenlam
	Paints & Distempers	
62	Cement Based Wall Putty	Birla wall care, JK White, Berger, Asian Paints
63	Cement Primer (Interior)	Nerolac, BP White (Berger), Decoprime WT (Asian), White Primer (ICI), Birla Opus Prime I-10
64	Cement Primer (Exterior)	Nerolac Popular Primer White, Asian Paints (AP Trucare Exterior Wall Primer), Berger Weather Coat Exterior Primer, Dulux Professional Exterior, Birla Opus Prime E-10
65	Acrylic Emulsion Paint (Interior)	Asian Paints (Apcolite All Protek), Nerolac (Beauty Gold Washable), Berger (Platina Easy Clean), ICI-Dulux: (3 in 1.), Birla Opus Calista Ever Clear/I50
66	Premium Acrylic Emulsion Paints (Interior)	Asian Paints: Royale, Nerolac : Impression, Berger : Silk Glamor ICI Dulux : Velvet touch Birla Opus Prime One Pure Elegance
67	Oil Bound Washable Distemper/Dry	Asian Paints (Professional Acrylic Distemper),

	Distemper	Nerolac : Beauty Acrylic Distemper Berger : Bison Acrylic Distemper Dulux ICI : Maxilite Birla Opus Prime D-20
68	1st Quality Acrylic Distemper (washable/Ready Mix/Low VOC)	Asian Paints (Tractor Aqua Lock Paint) Berger : Commando or equivalent paints Birla Opus Prime D-20
69	Premium Acrylic Smooth Exterior Paint with silicon additive	Asian Paints : Apex Ultima, Nerolac : Excel Total Berger : Weathercoat Long Life 7/ All Guard ICI-Dulux : Weathersheild Ultra Clean Birla Opus Prime E-70/True look
70	Textured Exterior Paint	Asian Paints, Nerolac, Berger Paints, ICI Dulux (Tex-matt), Ultratech Paint, Luxture Birla Opus Prime
71	Synthetic Enamel Paint	Asian (Apcolite Premium gloss enamel), Nerolac : Synthetic Hi gloss Berger : Luxol Hi gloss ICI-Dulux : Gloss Synthetic enamel Birla Opus Prime N-53/N52/ Sparkle glass/ Style Cover Max
72	Epoxy Paint	Asian Nerolac, Berger, ICI, Kansai Akzo Nobel, Birla Opus Prime
73	Fire Paint	Asian Paint, Akzo Nobel Coatings India Ltd. PROMAT, Jotun, Berger Paint, Birla Opus
74	Steel Primer (Red Oxide Zinc Chromate Primer)	Asian Paints, Nerolac, Berger, ICI, Birla Opus Prime/ NR8/ SGE RO Primer
75	Wood Primer	Asian Paints (Wood Primer- White/Pink), Berger ICI, Nerolac, Birla Opus Prime
76	Melamine Polish	Asian Paints Melamine Gold, Wudfin of Pidilite, Timbertone of ICI Dulux, Birla Opus Allwood
77	Gypsum Plaster	Ferrous Crete, Gyproc Saint Gobain, Ultratech, JK White
	Weather seals	
78	Epoxy Grouting compound	Saint Gobin-Weber, Markchem, Home Pride
79	Silicon based Structural sealant & Weather sealant	G.E. Plastics, Dow Corning, (Wacker), BASF, Pidilite (Dr. Fixit/Roff)
80	Poly-Sulphide Sealant	Fosroc, Pidilite (Dr. Fixit/Roff), Sika, BASF
	Plumbing & Drainage Works	
81	G.I./M.S. Pipe	Tata, Jindal (Hisar), PRAKASH SURYA.
82	G.I. Fittings	Unik, AVAk, Zoloto, Leader
83	CPVC Pipe & fitting	Astral, Supreme, Prince, Ashirwad, PRAYAG POLYMERS PVT. LTD
84	HDPE Pipes	Reliance, Jain Pipes, ORIPLAST, Supreme
85	DI Pipes	Electosteel, JSAW-JAL (JINDAL), Tata Ductura
86	DI Fittings	Electosteel, Jindal, Tata Ductura.
87	uPVC pipe and fittings	Astral, Supreme, Ashirwad, Prince, Finolex
88	Centrifugally Cast (spun) Iron pipes & fittings	NECO, Kapilansh, SKF, RPMF, BIC
89	Hubless Centrifugally Cast (spun) Iron Pipes & Fittings	NECO,SKF, Kapilansh

C=
I= } Nil AE(P) EE
O=

90	C.I. Manhole covers, frames & GI Gratings	NECO, BIC, Kapilansh, SKF, RAJ Iron Foundary Agra.
91	SFRC/RCC Manhole covers & gratings	KK, JAIN, PARGATI, NTC
92	RCC Pipes (NP-2)/(NP-3)	Lakshmi, Sood&Sood, Jain Pipe Co. (Newai), Mahaveer Enterprises (Newai), any other ISI marked with the approved by Engineer in Charge.
93	PE-AL-PE Composite pressure pipes and accessories	Jindal (Jindal Pex tube Pvt. Ltd.), Kitec.
	CP & Sanitary Fitting	
94	CP Brass Fittings (Superior Range)	Jaquar, Grohe, Roca, Kohler, Euronics
95	CP Brass Fittings (Normal Range)	Hindware, Jaquar (ESSCO Series), Parryware, PRIMA (ISI marked), CERA, Plumber, Johnson, KINGSTON, PRAYAG POLYMERS PVT. LTD. (Series 7000 & 6000), PLATO, KEROVIT, RAK, Euronics
96	Sanitary ware, Fittings & accessories (Superior Range)	Kohler, Roca, Hindware, Jaquar, Euronics
97	Sanitary ware, Fittings & accessories (Normal Range)	Hindware, CERA, Parryware, Jaquar (Esco), Johnson, PRIMA PRAYAG POLYMERS PVT. LTD, Somany, GLOCERA, RAK Ceramics, KEROVIT, Euronics
98	Mirror Glass	Atul, Modi Guard, Gold Plus, Golden Fish, Sisecam,
99	Stainless Steel Sink	Neelkanth, Nirali, Jayna, Johnson, PRAYAG POLYMERS PVT. LTD
100	Extruded Polystrene Insulation Board	Dowcorning, Supreme, Texas, Analco
101	SMC Tank	Sintex (Welspun), Sivosky, Mahindra
	Miscellaneous	
102	Stainless Steel Railing, Accessories etc.	JINDAL, Dorma, Giesse, Godrej, Hardwyn, KICH
103	Paver Block & Kerb Stone	Pavcon Hyper Tiles/Dynamic Industries, Dala Tiles, Mayur, KK, Power, Sharda, Navya, Any other ISI marked with the approval of engineer in charge.
104	Floor hardener	Ironite, Ferrok, Hardonate, Saint Gobin-Weber
105	PVC water tank	ISI Market tanks of sintex, Supreme, Prayag, Astral.
	Other Chemicals	
105	Acrylic Polymer	Sunanda Polyalk EP, Sika Latex, Dr. Fixit, Forsoc
106	Micro Concrete	Fosroc Renderoc RG or equivalent of Dr. Fixit, Sika, Ultratech, Forsoc
107	Polymer based bonding agent	Nitobond SBR 300 or equivalent of Sika, Dr. Fixit, Ultratech
108	Orgnosilane (water repellant coating on lime)	Zydex- Zycosil Max, CTS- Silo 112, Protecto Seal SW
109	Elastomeric coating compatible with lime and organosilicane protection	Zydex- Elastomax, or equivalent of Dr. Fixit, Forsoc, Sika Ultratech
110	Silicone solvent (Conservation grade water repellent containing silane or siloxane)	Silo 111, Silo 112 or equivalent of product of Dr. Fixit, Forsoc.
111	PU Injection grout	Sika Injection 201 CE, Dr. Fixit PU Foam Injection, Asian smartcare PU Injection foam or equivalent from Forsoc

C=
I=
O= } Nil AE(P) EE

CONTRACT FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER PROOFING WORKS

(BASEMENT/LOWER GROUND FLOOR/UNDER GROUND TANK/ROOF)

The Agreement made this _____ day of _____ Two thousand and _____ between _____ son of _____ (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 buildings and structures in the 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 and leak-proof for 10 (Ten) years from the date after the maintenance period prescribed in the contract.

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

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

(a) Misuse of roof shall mean any operation which will damage proofing treatment, like chopping of firewood and things of the same nature which might cause damage to the roof.

(b) Alteration shall mean construction of an additional storey or a part of the roof or construction adjoining to existing roof whereby proofing treatment is removed in parts.

(c) The decision of the Engineer-in–charge with regard to cause of leakage/seepage shall be final.

During this period of guarantee the guarantor shall make good all defects and in case of any defect being found, render the building water proof to the satisfaction of the Engineer-in–charge at his cost and shall commence the work for the 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 done by the department by some other agency contractor at the GUARANTOR's risk and cost. The decision of the Engineer-in–charge as to the cost payable by the Guarantor shall be final and binding.

C=
I=
O= } Nil AE(P) EE

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

IN WITNESS WHEREOF these presents have been executed by the Obliger_____ and by _____ and for and on behalf of the PRESIDENT OF INDIA on the day, month and year first above written SIGNED, SEALED AND delivered by OBLIGOR in the presence of :

1. …….
2. …….

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

1. …….
2. …….

C=
I= } Nil AE(P) EE
O=

TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF ALUMINIUM DOORS, WINDOWS VENTILATORS, STRUCTURAL GLAZING & ALUMINIUM COMPOSITE PANEL WORKS

The agreement made this _____ day of _____ Two Thousand and _____ between _____ son of _____ (hereinafter called the GURANTOR 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, leak proof and sound material, workmanship, anodizing, colouring, sealing.

AND WHEREAS THE GURANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable, leak proof and guaranteed against faulty material and workmanship, defective anodizing, colouring, sealing and finishing for 2 (Two) years to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

NOW THE GUARANTOR hereby guarantee that work executed by him will remain structurally stable, leak proof and guaranteed against faulty material and workmanship, defective anodizing, colouring, sealing and finishing for two 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 defects shall be final.

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

That if the guarantor fails to make good all the defects 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 ON BEHALF OF THE PRESIDENT OF INDIA BY _____ _____ in the presence of :

1. _____
2. _____

TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER SUPPLY AND SANITARY INSTALLATIONS

The agreement made this _____ day of _____ Two Thousand and _____ between _____ son of _____ (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, finishing and use of sound materials.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable and guaranteed against faulty workmanship, finishing, manufacturing defects of materials and leakages, etc.

NOW THE GUARANTOR hereby guarantee that work executed by him will remain structurally stable after expiry of maintenance period prescribed in the contract for the minimum life of 02 (Two) year 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 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 make good all the defects 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

C=
I=
O= } Nil AE(P) EE

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. _____

TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS <u>AFTER COMPLETION IN RESPECT OF STONE WORKS</u>

The agreement made this _____ day of _____ Two Thousand and _____ between _____ son of _____ (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, finishing and use of sound materials.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable and guaranteed against faulty workmanship, finishing and unsound materials and other related problems.

NOW THE GUARANTOR hereby guarantee that work executed by him will remain structurally stable after the expiry of maintenance period prescribed in the contract for the minimum life of five years to be reckoned from the date after 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 to the satisfaction of the Engineer-in-charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the Guarantor's risk and cost. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to make good all the defects, 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

C= I= O=	Nil	AE(P)	EE

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. _____

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

Form of Bank Guarantee for Earnest Money Deposit /performance Guarantee/Security Deposit/Mobilization Advance

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

   OR**

   Whereas the Executive Engineer ……(name of division) CPWD on behalf of the President of India (hereinafter called "The Government") has entered into an agreement bearing number ……..with .....(name and address of the contractor)…….. (hereinafter called "the Contractor") for execution of work..... ... (name of work) …….. The Government has further agreed to accept an irrevocable Bank Guarantee for Rs. ..... (Rupees .... …….only) valid upto……..... (date).....**as Performance Guarantee/security Deposit/Mobilization Advance** from the said Contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.
2. We, ... (indicate the name of the bank)…… (herein after referred to as "the Bank"), hereby undertake to pay to the Government an amount not exceeding Rs..... (Rupees ……. only) on demand by the Government within 10 days of the demand.
3. We, ... (indicate the name of the Bank)……., do here by undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ..... (Rupees .....only)
4. We, ... (indicate the name of the Bank) ..... , further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor in any suit or proceeding pending before any court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the contractor shall have no claim against us for making such payment.
5. We, ... (indicate the name of the Bank) …….further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation here under to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor from time to time or to postpone for any time or

C=
I=
O= } Nil AE(P) EE

from time to time any of the powers exercisable by the Government against the said contractor and to forbear or enforce any of the terms and conditions rerating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor or for any forbearance, act of omission on the part of the 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.

6. We, ...(indicate the name of the Bank)……., further agree that the Government at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor at the first instance without proceeding against the contractor and notwithstanding any security or other guarantee the Government may have in relation to the Contractor's liabilities.
7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.
8. We, ...(indicate the name of the Bank)……undertake not to revoke this guarantee except with the consent of the Government in writing.
9. This Bank Guarantee shall be valid up to …….unless extended on demand by the Government. Notwithstanding any mentioned above, our liability against this guarantee is restricted to Rs. ……(Rupees…….only) if unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Date……..

Witnesses:

1. Signature.....
   Name and address

Authorized signatory
Name
Designation
Staff code no.
Bank seal

2. Signature……
   Name and address

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

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

C=
I=
O=

Nil AE(P) EE

FROM OF APPLICATION BY THE CONTRACTOR FOR SEEKING RESCHEDULING OF MILESTONES
[Refer Clause 5.3]

1. Name of contractor
2. Name of work as given in the agreement
3. Agreement No.
4. Estimated amount put tender
5. Date of commencement of work as per agreement
6. Period allowed for completion of work as per agreement
7. Date of completion stipulation in agreement
8. Rescheduling of milestones done previously

Milestone No. Already Rescheduled	**EE's Letter No. and Date**	**Rescheduling Of Milestones Done**	
		Original Date	**Rescheduled Date**
(A) 1st Milestone			
(B) 2ndMilestone			

Rescheduling of Milestone applied for

Milestone No. For Which Rescheduling is Applied	**Original/Rescheduled Date**	**Details And Period of Hindrances**	**Comments of Executive Engineer**	**Proposed Rescheduled Date of**
(A) 1st Milestone				
(B) 2ndMilestone				

Submitted to the Sub-Divisional Officer **Signature of Contactor**

Dated

C=
I= } Nil AE(P) EE
O=

Schedule of Quantity

Name of Work :- Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
1	**EARTH WORK**					**2**
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and for all lift, as directed by Engineer-in-charge.					2.6
1.1.1	All kinds of soil.	1,245.00	cum	177.50	220,988	2.6.1
1.2	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms for all depth including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m :					2.10
1.2.1	All kinds of soil					2.10.1
1.2.1.1	Pipes, cables etc. exceeding 80 mm dia. But not exceeding 300 mm dia	180.00	metre	352.15	63,387	2.10.1.2
1.3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and for all lift.	906.00	cum	196.00	177,576	2.25
1.4	Excavating, supplying, stacking and filling of local earth (including royalty) by mechanical transport upto a lead of 5km also including ramming and watering of the earth in layers not exceeding 20 cm in foundation trenches, plinth, sides of foundation etc. complete for all lift.	576.00	cum	700.50	403,488	2.25A
1.5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	35.00	cum	2123.75	74,331	2.27

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
1.6	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	1,152.00	sqm	17.60	20,275	2.31
2	**CEMENT CONCRETE (CAST IN SITU)**					**4**
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 :					4.1
2.1.1	1:5:10 (1 cement : 5 coarse sand (zone-III) derived from natural sources : 10 graded stone aggregate 40 mm nominal size derived from natural sources)	51.00	cum	6518.60	332,449	4.1.10
2.2	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets, sunken floor etc., up to floor five level, excluding the cost of centering, shuttering and finishing:					4.2
2.2.1	1:1½:3 (1 cement : 1½ coarse sand (zone-III) derived from natural sources : 3 graded stone aggregate 20 mm nominal size derived from natural sources).	4.00	cum	10357.55	41,430	4.2.2
2.3	Centering and shuttering including strutting, propping etc. and removal of form work for :					4.3
2.3.1	Foundations, footings, bases for columns	25.00	sqm	392.15	9,804	4.3.1
2.3.2	Retaining walls, return walls, walls (any thickness) including attached pilasters, buttresses, plinth and string courses fillets, kerbs and steps etc.	25.00	sqm	842.50	21,063	4.3.2
2.4	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone-III) derived from natural sources : 6 graded stone aggregate 20 mm nominal size derived from natural sources) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and consolidated and grouted with fine sand, including necessary excavation, levelling & dressing & finishing the top smooth.	127.00	sqm	749.30	95,161	4.17

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
3	**REINFORCED CEMENT CONCRETE**					**5**
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 :					5.1
3.1.1	1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size de rived from natural sources)	35.00	cum	8583.40	300,419	5.1.3
3.2	Centering and shuttering including strutting, propping etc. and removal of form for					5.9
3.2.1	Foundations, footings, bases of columns, etc. for mass concrete	165.30	sqm	392.15	64,822	5.9.1
3.2.2	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	285.00	sqm	842.50	240,113	5.9.2
3.2.3	Suspended floors, roofs, landings, balconies and access platform	667.00	sqm	927.25	618,476	5.9.3
3.2.4	Shelves (Cast in situ)	19.00	sqm	927.25	17,618	5.9.4
3.2.5	Lintels, beams, plinth beams, girders, bressumers and cantilevers	1,136.00	sqm	736.40	836,550	5.9.5
3.2.6	Columns, Pillars, Piers, Abutments, Posts and Struts	627.00	sqm	961.30	602,735	5.9.6
3.2.7	Stairs, (excluding landings) except spiral-staircases	165.00	sqm	764.95	126,217	5.9.7
3.2.8	Edges of slabs and breaks in floors and walls					5.9.16
3.2.8.1	Under 20 cm wide	162.00	metre	208.55	33,785	5.9.16.1
3.2.9	Weather shade, Chajjas, corbels etc., including edges	46.00	sqm	951.10	43,751	5.9.19
3.3	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level.					5.22
3.3.1	Thermo-Mechanically Treated bars of grade Fe-500D or more.	34,265.55	kg	107.85	3,695,540	5.22.6
3.4	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level.					5.22A
3.4.1	Thermo-Mechanically Treated bars of grade Fe-500D or more.	31,310.10	kg	107.85	3,376,794	5.22A.6
3.5	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections.	90.00	metre	78.40	7,056	5.30

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
3.6	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.					5.33
3.6	All works upto plinth level					5.33.1
3.6.1	Concrete of M30 grade with minimum cement content of 350 kg /cum	343.00	cum	9655.70	3,311,905	5.33.1.2
3.6.2	All works above plinth level upto floor V level					5.33.2
3.6.2.1	Concrete of M30 grade with minimum cement content of 350 kg /cum	364.56	cum	10011.35	3,649,738	5.33.2.2
4	**Masonary Work**					**6**
4.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :					6.4
4.1.1	Cement mortar 1:6 (1 cement : 6 coarse sand)	287.00	Cum	9,105.95	2,613,408	6.4.2
4.2	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.					6.13
4.2.1	Cement mortar 1:4 (1 cement :4 coarse sand)	565.00	Sqm	1,123.80	634,947	6.13.2
4.3	Extra for providing and placing in position 2 Nos 6 mm dia. M.S. bars at every third course of half brick masonry.	565.00	Sqm	104.80	59,212	6.15

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
4.4	Brick edging 7cm wide 11.4 cm deep to plinth protection with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 including grouting with cement mortar 1:4 (1 cement : 4 fine sand).	121.00	Metre	60.85	7,363	6.44
5	**Cladding Work**					**8**
5.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing of edges to give high gloss finish etc. complete at all levels.					8.2
5.1.1	Granite stone slab of colour black, Cherry/Ruby red					8.2.2
5.1.1.1	Area of slab over 0.50 sqm	35.00	Sqm	5,136.30	179,771	8.2.2.2
5.2	Granite stone slab of all colour and texture except black, Cherry/Ruby red					8.2.3
5.2.1	Area of slab upto 0.50 sqm	19.00	sqm	4,170.70	79,243	8.2.3.1
5.3	Providing edge moulding to 18 mm thick marble stone counters, Vanities etc., including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.					8.3
5.3.1	Granite work	214.00	Metre	510.95	109,343	8.3.2
5.4	Extra for fixing marble /granite stone, over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive, including cleaning etc. complete.	64.00	Metre	568.55	36,387	8.4
5.5	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	20.00	Each	978.70	19,574	8.5

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
5.6	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, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	413.00	Sqm	1,267.95	523,663	8.31
6	**Wood and P.V.C. Work**					**9**
6.1	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) non-decorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters:					9.21
6.1.1	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	95.00	Sqm	2,392.65	227,302	9.21.1
6.2	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.					9.48
6.2.1	Fixed to openings /wooden frames with rawl plugs screws etc.	2446.00	Kg	238.35	583,004	9.48.2
6.3	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete.					9.101
6.31	Twin rubber stopper	39.00	Each	72.35	2,822	9.101.2
6.4	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt/ suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S, including cost of adhesive of approved quality.					9.127
6.4.1	1.0 mm thick	68.04	Sqm	897.30	61,052	9.127.2

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
6.5	Providing and fixing wire gauge shutters using stainless steel grade 304 wire gauge with wire of dia 0.5 mm and average width of aperture 1.4 mm in both directions for doors, windows and clerestory windows with necessary screws :					9.134
6.5.1	35 mm thick shutters					9.134.1
6.5.1.1	With ISI marked stainless steel butt hinges of required size					9.134.1.2
6.5.1.1.1	Second class teak wood	13.00	sqm	5217.65	67,829	9.134.1.2.1
6.6	Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape & size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash & mullion (if required) shall be mitred cut and fusion					9.147A
	welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification & direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 & IS: 16231 shall be paid separately.					

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
	Note:- Structural design proof checked from a Government Engineering Institute, to be provided by the manufacturer for : (i) Sites with basic wind speed > 45 m/sec as per IS 875 – Part 3 (ii) Sites with structure height more than 20m for all wind speeds					
6.6.1	Three track three panels sliding window with two glazed & one wire mesh panels with Aluminium channel for roller track, wool pile, nylon rollers with SS 304 body.					9.147.A4
6.6.1.1	Using R3 series with frame (98 mm & above) x (40 mm & above) & both glazed and fly screen sash (30 mm & above) x (55 mm & above) with zinc alloy (zamak) powder coated handle on every glazed panel along with multi-point locking system. (Height upto 1.8m).	113.00	Sqm	10,874.20	1,228,785	9.147.A4.2
6.6.2	Fixed window / ventilator with mullion / transom.					9.147.C2
6.6.2.1	Using R1 series with frame (33 mm & above) x (35 mm & above) & mullion (33 mm & above) x (50 mm & above). (Height upto 0.90 metre)	5.00	Sqm	9,155.20	45,776	9.147.C2.1
6.6.3	Casement Window with Double Rebate Frame with one Side Hung Glazed Panel and one Side Hung wire mesh Panel with S.S. 304 friction hinges as per size and weight of sash, multi-point locking system, zinc alloy (zamak) powder coated handles on both glazed and fly screen panel					9.147.E6
6.6.3.1	Using R3 series with frame (110mm & above) x (45mm & above) & glazed sash (55mm & above) x (65mm & above) & fly screen sash (30mm & above) x (55mm & above) & metal grill (if required to be paid separately). (Height upto 1.8 metre)	60.00	Sqm	22,785.35	1,367,121	9.147.E6.1
6.6.4	Casement door double panel with French (False) Mullion with zinc alloy (zamak) 3D hinges, multi-point locking system with cylinder, zinc alloy (zamak) powder coated handles on both sides.					9.147.F2
6.6.4.1	Using R3 series with frame (55 mm & above) x (50mm & above) & sash (55 mm & above) x (85mm & above) & French (False) mullion (55 mm & above) x (60mm & above). (Height upto 2.5 metre).	34.00	Sqm	11,903.75	404,728	9.147.F2.1

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
6.7	Providing and fixing cupboard shutter with 19mm thick one side decorative and other side balancing lamination factory pressed BWP grade marine ply as per IS 710 of approved brand including 2mm thick PVC edge banding tape with hot glue by edge bending machine etc. with auto closing spring loaded hinges (hydraulic type) etc. complete as per direction of Engineerin- charge.(Payment of providing and fixing auto closing hinges shall be paid separately)	35.00	sqm	2,829.25	99,024	9.168
7	**Steel Work**					**10**
7.1	Providing and fixing 1 mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.					10.5
7.1.1	Using flats 30x6 mm for diagonal braces and central cross piece	4.00	Sqm	5,563.75	22,255	10.5.2
7.2	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.					10.6
7.2.1	80x0.90 mm M.S. laths with 0.90 mm thick top cover	6.00	sqm	3,191.35	19,148	10.6.3

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
7.3	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners , stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge, (for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.).	415.00	Kg.	772.40	320,546	10.28
8	**Flooring**					**11**
8.1	Providing and laying Ceramic glazed floor tiles of size 300x300 mm (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in colours such as White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement : 4 Coarse sand), Jointing with grey cement slurry @ 3.3 kg/sqm including pointing the joints with white cement and matching pigment etc., complete.	128.00	Sqm	1,096.55	140,358	11.37
8.2	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.					11.41A

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
8.2.1	Double charge vitrified tile polished finish of size					11.41A.1
8.2.1.1	Size of Tile 600 x 600 mm	250.00	Sqm	1,453.65	363,413	11.41A.1.1
8.2.1.2	Size of Tile 600 x 1200 mm	190.00	Sqm	1,577.15	299,659	11.41A.1.3
8.3	Providing and laying Vitrified tiles in floor in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS:15622, of approved brand & manufacturer, in all colours and shade, laid on 20 mm thick cement mortar 1:4 (1 cement: 4 coarse sand) jointing with grey cement slurry @3.3 kg/sqm including grouting the joints with white cement and matching pigments etc. The tiles must be cut with the zero chipping diamond cutter only . Laying of tiles will be done with the notch trowel, plier, wedge, clips of required thickness, leveling system and rubber mallet for placing the tiles gently and easily.					11.41A
8.3.1	Glazed Vitrified tiles Matt/Antiskid finish of size					11.41A.3
8.3.1.1	Size of Tile 600 x 600 mm	40.00	sqm	1,464.85	58,594	11.41A.3.1
8.4	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.					11.46
8.4.1	Size of Tile 600x600 mm	80.00	Sqm	1,623.05	129,844	11.46.2
8.5	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge.					11.56

C= NIL

I= NIL

O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
8.5.1	Polished Granite stone slab of colour Black, Cherry/Ruby Red or equivalent	175.00	Sqm	4,481.30	784,228	11.56.1
9	**Roofing**					**12**
9.1	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes.					12.41
9.1.1	110 mm diameter	120.00	metre	377.40	45,288	12.41.2
9.2	Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion.					12.42
9.2.1	Bend 87.5°					12.42.5
9.2.1.1	110 mm bend	8.00	each	150.35	1,203	12.42.5.2
9.3	Shoe (Plain)					12.42.6
9.3.1	110 mm Shoe	8.00	each	131.85	1,055	12.42.6.2
9.4	Providing and fixing unplasticised -PVC pipe clips of approved design to unplasticised - PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with M.S. screws of required length, including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete.					12.43
9.4.1	110 mm	48.00	each	371.30	17,822	12.43.2

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
9.5	Providing and fixing tiled false ceiling of specified materials of size 595x595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanized steel sections (galvanized @ 120 grams/ sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm center to center and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid including, required cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x 37 x 25 x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm GI adjustable rods with galvanised butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200 mm center to center along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all complete for all					12.52
9.5.1	GI Metal Ceiling Lay in plain Tegular edge Global white color tiles of size 595x595 mm, and 0.5 mm thick with 8 mm drop; made of G I sheet having galvanizing of 100 gms/sqm (both sides inclusive) and electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending.	34.00	sqm	1902.95	64,700	12.52.1

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
9.6	Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture of size 595 x 595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanised steel sections (galvanising @ 120 grams per sqm including both side) consisting of main 'T' runner suitably spaced at joints to get required length and of size 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, resting on periphery walls /partitions on a Perimeter wall angle pre-coated steel of size(24x24X3000 mm made of 0.40 mm thick (minimum) sheet with the help of rawl plugs at 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture in the grid, including, cutting/ making opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc., wherever required. Main 'T' runners to be suspended from ceiling using G.I. slotted cleats of size 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T'. Bottom exposed with 24 mm of all T-sections shall be pre-painted with polyster baked paint, for all heights, as per specifications, drawings and as directed by Engineer-in-Charge.					
	Note :- Only calcium silicate false ceiling area will be measured from wall to wall. No deduction shall be made for exposed frames/opening (cut outs) having area less than 0.30 sqm.The calcium silicate ceiling tile shall have NRC value of 0.50 (Minimum), light reflection > 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity <0.043 w/mK.	214.00	sqm	2158.15	461,844	12.53
10	**Finishing**					**13**
10.1	12 mm cement plaster of mix :					13.4
10.1.1	1:6 (1 cement: 6 coarse sand)	3350.00	Sqm	343.65	1,151,228	13.4.2
10.2	15 mm cement plaster on rough side of single or half brick wall of mix:					13.5
10.2.1	1:6 (1 cement: 6 coarse sand)	3350.00	Sqm	395.35	1,324,423	13.5.2
10.4	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade:					13.47
10.4.1	New work (Two or more coats applied @ 1.43 ltr/10 sqm over and including priming coat of exterior primer applied @ 0.90 litre/10 sqm)	1424.00	Sqm	171.10	243,646	13.47.1

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
10.5	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :					13.61
10.5.1	Two or more coats on new work	8.00	Sqm	155.90	1,247	13.61.1
10.6	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	6700.00	Sqm	156.05	1,045,535	13.80
10.7	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.					13.83
10.7.1	Two coats	1926.00	Sqm	142.80	275,033	13.83.2
10.8	Applying priming coats with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound) content.					13.85
10.8.1	With ready mixed pink or grey primer on wood work (hard and soft wood) having VOC content less than 50 grams/ litre	122.00	sqm	70.35	8,583	13.85.1
10.8.2	With water thinnable cement primer on wall surface having VOC content less than 50 grams/litre	1926.00	sqm	73.95	142,428	13.85.3
10.9	White washing with lime to give an even shade :					13.37
10.9.1	New work (three or more coats)	248.00	sqm	39.05	9,684	13.37.1
11	**ROAD WORK**					**16**
11.1	Supplying at site Angle iron post & strut of required size includingbottom to be split and bent at right angle in opposite direction for 10cm length and drilling holes upto 10 mm dia. etc. complete.	545.00	kg	125.75	68,534	16.19
11.2	Providing and filling in position rubberized bitumen hot sealing compound for sealing of expansion joints in roads / pavements all complete as per direction of the Engineer-in-Charge.					16.46
11.2.1	Providing and filling in position rubberized bitumen hot sealing compound for sealing of expansion joints in roads / pavements all complete as per direction of the Engineer-in-Charge	937.50	per cm depth per cm width per metre length	8.65	8,109	16.46.1

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
11.3	Providing and fixing concertina coil fencing with punched tapeconcertina coil 600 mm dia 10 metre openable length (total length90 m), having 50 nos rounds per 6 metre length, upto 3 m height ofwall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apartand with 9 horizontal R.B.T. reinforced barbed wire, stud tied withG.I. staples and G.I. clips to retain horizontal, including necessarybolts or G.I. barbed wire tied to angle iron, all complete as per directionof Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Springcore (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mmwith tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	164.00	metre	375.80	61,631	16.53
11.4	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-charge).	4.92	cum	10117.60	49,779	16.69
11.5	Providing and laying matt finished vitrified tile of size 300x300x9.8 mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20 mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	258.00	sqm	1455.65	375,558	16.89

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
11.6	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 compacted bed of sand, 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.					16.91
11.6.1	80 mm thick C.C. paver block of M-35 grade with approved color design and pattern.	205.00	sqm	1091.50	223,758	16.91.2
12	**SANITARY INSTALLATIONS**					**17**
12.1	Providing and fixing water closet squatting pan (Indian type W.C. pan) with 100 mm sand cast Iron P or S trap, 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:					17.1
12.1.1	White Vitreous china Orissa pattern W.C. pan of size 580x440 mm with integral type foot rests	5.00	each	6767.40	33,837	17.1.1
12.2	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 :					17.2
12.2.1	W.C. pan with ISI marked white solid plastic seat and lid	10.00	each	6515.55	65,156	17.2.1
12.3	Providing and fixing wash basin with C.I. brackets, 15 mm dia CP Brass single hole basin mixer of approved quality and make, including painting of fittings and brackets, cutting and making good the walls wherever required:-					17.7A

C= NIL

I= NIL

O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
12.3.1	(a) White Vitreous China Wash basin size 550x400 mm with a 15 mm CP Brass single hole basin mixer	10.00	each	3960.55	39,606	17.7A.1
12.4	Providing and fixing Stainless Steel A ISI 304 (18/8) kitchen sink as per IS:13983 with C.I. brackets and stainless steel plug 40 mm, including painting of fittings and brackets, cutting and making good the walls wherever required :					17.10
12.4	Kitchen sink with drain board					17.10.1
12.4.1	510x1040 mm bowl depth 225 mm	6.00	each	7514.65	45,088	17.10.1.2
12.5	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete.					17.28
12.5.1	Semi rigid pipe					17.28.1
12.5.1.1	32 mm dia	28.00	each	103.90	2,909	17.28.1.1
12.6	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.	17.00	each	1607.95	27,335	17.31
12.7	Providing and fixing soil, waste and vent pipes :					17.35
12.7.1	100 mm dia					17.35.1
12.7.1.1	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905	300.00	metre	1169.30	350,790	17.35.1.3
12.8	Providing and fixing bend of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.					17.38
12.8.1	100 mm dia					17.38.1
12.8.1.1	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	60.00	each	567.20	34,032	17.38.1.3
12.9	Providing and fixing plain bend of required degree.					17.39
12.9.1	100 mm dia					17.39.1
12.9.1.1	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905	150.00	each	368.00	55,200	17.39.1.3
12.10	Providing and fixing single equal plain junction of required degree :					17.44
12.10.1	100x100x100 mm					17.44.1
12.10.1.1	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	70.00	each	581.45	40,702	17.44.1.3
12.11	Providing and fixing terminal guard :					17.56
12.11.1	100 mm					17.56.1
12.11.1.1	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	30.00	each	427.80	12,834	17.56.1.3
12.12	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe					17.57A
12.12.1	100 mm dia					17.57A.1
12.12.1.1	SS 304 grade coupling with EPDM rubber gasket	84.00	each	432.05	36,292	17.57A.1.1

C= NIL

I= NIL

O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
12.13	Providing and fixing trap of self cleansing design with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors :					17.60
12.13.1	100 mm inlet and 100 mm outlet					17.60.1
12.13.1.1	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	32.00	each	854.55	27,346	17.60.1.3
13	**WATER SUPPLY**					18
13.1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c 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					18.8
13.1.1	20 mm nominal dia Pipes	360.00	metre	537.60	193,536	18.8.2
13.2	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc. Internal work - Exposed on wall					18.10
13.2.1	25 mm dia nominal bore	260.00	metre	551.70	143,442	18.10.3
13.2.2	32 mm dia nominal bore	105.00	metre	667.00	70,035	18.10.4
13.2.3	40 mm dia nominal bore	30.00	metre	811.90	24,357	18.10.5
13.3	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. External work					18.12
13.3.1	65 mm dia nominal bore	100.00	metre	896.60	89,660	18.12.7
13.4	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :					18.17
13.4.1	25 mm nominal bore.	21.00	each	622.40	13,070	18.17.1
13.4.2	40 mm nominal bore	2.00	each	826.10	1,652	18.17.3
13.4.3	65 mm nominal bore	2.00	each	1742.15	3,484	18.17.5
13.5	Providing and fixing uplasticised PVC connection pipe with brass unions :					18.21
13.5.1	45 cm length					18.21.2
13.5.1.1	15 mm nominal bore	92.00	each	97.75	8,993	18.21.2.1
13.6	Painting G.I. pipes and fittings with synthetic enamel white paint with two coats over a ready mixed priming coat, both of approved quality for new work :					18.38
13.6.1	25 mm diameter pipe	250.00	metre	30.25	7,563	18.38.3
13.6.2	32 mm diameter pipe	105.00	metre	36.35	3,817	18.38.4
13.6.3	40 mm diameter pipe	45.00	metre	42.65	1,919	18.38.5

C= NIL

I= NIL

O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
13.7	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality :					18.40
13.7.1	65 mm diameter pipe	100.00	metre	37.85	3,785	18.40.7
13.8	Providing and filling sand of grading zone V or coarser grade, allround the G.I. pipes in external work :					18.41
13.8.1	65 mm diameter pipe	100.00	metre	273.45	27,345	18.41.7
13.9	Providing and fixing G.I. Union in G.I. pipe including cutting and threading the pipe and making long screws etc. complete (New work) :					18.46
13.9.1	25 mm nominal bore	24.00	each	439.25	10,542	18.46.3
13.9.2	40 mm nominal bore	2.00	each	631.30	1,263	18.46.5
13.9.3	65 mm nominal bore	2.00	each	1136.80	2,274	18.46.7
13.10	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	25,000.00	Per litre	11.00	275,000	18.48
13.10	Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931 :					18.49
13.10.1	15 mm nominal bore	21.00	each	506.80	10,643	18.49.1
13.11	Providing and fixing C.P. brass long body bib cock of approved quality conforming to IS standards and weighing not less than 690 gms.					18.51
13.11.1	15 mm nominal bore	58.00	each	798.95	46,339	18.51.1
13.12	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931.					18.52
13.12.1	15 mm nominal bore	21.00	each	670.45	14,079	18.52.1
13.13	Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931					18.53
13.13.1	15mm nominal bore	84.00	each	574.30	48,241	18.53.1
13.14	Providing and fixing C.P. Brass extension nipple (size 15mmx50mm) of approved make and quality as per direction of Engineer-in-charge.	210.00	each	74.80	15,708	18.53A
13.15	Providing and fixing PTMT grating of approved quality and colour.					18.58
13.15.1	Circular type					18.58.1
13.15.1.1	100 mm nominal dia	32.00	each	37.60	1,203	18.58.1.1
13.15.1.2	125 mm nominal dia with 25 mm waste hole	14.00	each	51.85	726	18.58.1.2
14	**DRAINAGE**					**19**
14.1	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :					19.1

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
14.1.1	150 mm diameter	164.00	metre	695.80	114,111	19.1.2
14.2	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) all-round S.W. pipes including bed concrete as per standard design :					19.2
14.2.1	150 mm diameter S.W. pipe	164.00	metre	1179.85	193,495	19.2.2
14.3	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:					19.4
14.3.1	180x150 mm size P type					19.4.3
14.3.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	24.00	each	2802.15	67,252	19.4.3.1
14.4	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :					19.6
14.4.1	250 mm dia. R.C.C. pipe	164.00	metre	899.80	147,567	19.6.3
14.5	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 :					19.7
14.5.1	Inside size 120x90 cm and 90 cm deep including C.I . Cover with frame (medium duty) 500 mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg) :					19.7.2
14.5.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	10.00	each	26405.50	264,055	19.7.2.1
14.5.2	Size 120x90 cm					19.8.2
14.5.2.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	10.00	metre	10585.50	105,855	19.8.2.1

C= NIL

I= NIL

O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
14.6	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design :					19.27
14.6.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	20.00	each	5957.90	119,158	19.27.1
15	**Aluminium work**					**22**
15.1	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):					21.3
15.1.1	With float glass panes of 5 mm thickness (weight not less than 12.50 kg/sqm) **Note: This item shall also be used for measurement of glazzing in UPVC windowes.**	159.00	Sqm	1,505.25	239,335	21.3.2
16	**Water Proofing**					**16**
16.1	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:					22.7
	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.					
	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in- harge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.					

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge.					
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.					
	(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. "All above operations to be done in order and as directed and specified by the Engineer-in-Charge":					
16.1.1	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	345.00	Sqm	1,684.60	581,187	22.7.1
17	**RAIN WATER HARVESTING & TUBEWELLS**					**23**
17.1	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/ bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer-in-charge, upto 90 metre depth below ground level.					23.1
17.1.1	All types of soil					23.1.1
17.1.1.1	300 mm dia	240.00	metre	707.75	169,860	23.1.1.1
17.2	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/ bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer -in-charge, beyond 90 metre & upto 150 metre depth below ground level.					23.2
17.2.1	All types of soil					23.2.1
17.2.1.1	300 mm dia	60.00	metre	825.70	49,542	23.2.1.1

C= NIL

I= NIL

O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
17.3	Supplying, filling, spreading & leveling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	30.00	cum	1509.80	45,294	23.5
17.4	Supplying, filling, spreading & leveling gravels of size range 5 mm to 10 mm, in the recharge pit, over the existing layer of boulders, in required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	8.00	cum	1538.25	12,306	23.6
17.5	Supplying, filling, spreading & leveling coarse sand of size range 1.5 mm to 2 mm in recharge pit, in required thickness over gravel layer, for all leads & lifts, all complete as per direction of Engineer -in- charge.	8.00	cum	1538.25	12,306	23.7
17.6	Gravel packing in tubewell construction in accordance with IS: 4097, including providing gravel fine/ medium/ coarse, in required grading & sizes as per actual requirement, all complete as per direction of Engineer-in-charge.	16.00	cum	2024.50	32,392	23.8
17.7	Supplying, assembling, lowering and fixing in vertical position in bore well, unplasticized PVC medium well casing (CM) pipe of required dia, conforming to IS: 12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer -in-charge.					23.3
17.7.1	150 mm nominal size dia	110.00	metre	793.25	87,258	23.3.2
17.8	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS: 12818, including hire & labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer-in-charge.					23.4
17.8.1	150 mm nominal size dia	120.00	metre	807.45	96,894	23.4.2

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
17.9	Development of tube well in accordance with IS : 2800 (part I) and IS: 11189, to establish maximum rate of usable water yield without sand content (beyond permissible limit), with required capacity air compressor, running the compressor for required time till well is fully developed, measuring yield of well by "V" notch method or any other approved method, measuring static level & draw down etc. by step draw down method, collecting water samples & getting tested in approved laboratory, i/c disinfection of tubewell, all complete, including hire & labour charges of air compressor, tools & accessories etc., all as per requirement and direction of Engineer-in-charge.	45.00	hr	1085.05	48,827	23.12
17.10	Providing and fixing M.S. clamp of required dia to the top of casing/ housing pipe of tubewell as per IS: 2800 (part I), including necessary bolts & nuts of required size complete.					23.14
17.10.1	200 mm clamp	3.00	each	2293.65	6,881	23.14.3
17.11	Providing and fixing Bail plug/ Bottom plug of required dia to the bottom of pipe assembly of tubewell as per IS:2800 (part I).					23.15
17.11.1	200 mm dia	3.00	each	357.60	1,073	23.15.3

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
18	**New technologies**					**26**
18.1	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid door/ window/ clerestory windows & desertory other Frames/Chowkhat comprising of virgin PVC polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibers (wood powder/ rice husk/ wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) fabricated with miter joints after applying PVC solvent cement and screwed with full body threaded star headed SS screws having minimum frame density of 750 kg/ cum, screw withdrawal strength of 2200 N (Face) & 1100 N (Edge), minimum compressive strength of 58 N/mm2, modulus of elasticity 900 N/mm2 and resistance to spread of flame of Class A category with property of being termite/borer proof, water/moisture proof and fire retardant and fixed in position with M.S hold fast/lugs/SS dash fasteners of required dia and length complete as per direction of Engineer-In-Charge. (M.S hold fast/lugs or SS dash fasteners shall be paid for separately). Note: For WPC solid door/window frames, minus 5mm tolerance in dimensions i.e depth and width of profile shall be acceptable. Variation in profile dimensions on plus side shall be acceptable but no extra payment on this account shall be made.					26.86
18.1.1	Frame size 45 x 70 mm	88.00	metre	705.85	62,115	26.86.1
18.1.2	Frame size 65 x 100 mm	151.00	metre	1111.30	167,806	26.86.5
18.2	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid decorative type flush door shutter of required size comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibers (wood powder/ rice husk/wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/cum and screw withdrawal strength of 1800 N (Face) & 900 N (Edge), minimum compressive strength 50 N/ mm2, modulus of elasticity 850 N/mm2 and resistance to spread of flame of Class A category with property of being termite/ borer proof, water/moisture proof and fire retardant. WPC to be laminated with PVC foil of minimum 14 microns thick of approved design pasted with hot melt adhesive on both faces of shutter and fixing with stainless steel butt hinges of required size with necessary full body threaded star headed counter sunk S.S screws, all as per direction of Engineer-In-Charge. (Note: stainless steel butt hinges and necessary S.S screws shall be paid separately)					26.88

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
18.2.1	30 mm thick	40.00	sqm	4764.20	190,568	26.88.1
18.3	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid board one side white color and other side of board laminted with PVC foil of minimum 14 micron thickness of approved design pasted with hot melt adhesive for cup boards, work stations and bathroom/kitchen cabinet etc. of required sizes comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibers (wood powder/ rice husk/wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/cum and screw withdrawal strength of 1800 N (Face) & 900 N (Edge), minimum compressive strength 50 N/mm2, modulus of elasticity 850 N/mm2 and resistance to spread of flame of Class A category with property of being termite/borer proof, water/moisture proof and fire retardant and fixing with stainless steel piano hinges/soft close clip on concealed hinges of required size with necessary full body threaded star headed counter sunk S.S screws, all as per direction of Engineer-In- Charge. (Note: stainless steel piano hinges/soft close clip on concealed hinges and necessary S.S screws shall be paid separately)					26.89
18.3.1	25 mm thick	35.00	sqm	3889.15	136,120	26.89.2
18.4	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid plain white color board for backing of cup boards and bathroom/kitchen cabinets etc. of required size comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibers (wood powder/ rice husk/wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/cum and screw withdrawal strength of 1800 N (Face) & 900 N (Edge), minimum compressive strength 50 N/mm2, modulus of elasticity 850 N/mm2 and resistance to spread of flame of Class A category with property of being termite/borer proof, water/moisture proof and fire retardant and fixing with stainless steel screws etc. all as per direction of Engineer-In- Charge. (Note: stainless steel screws shall be paid separately)					26.90
18.4.1	6 mm thick	35.00	sqm	1099.35	38,477	26.90.1
	Total				**39,234,495**	
	Modified Estimated Cost after using correction factor on DSR 2023 on account of GST @ 0.973				38,175,164	

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
	Add Cost Index @-1% (Cost Index of @99 as on 01.04.2025 based on PAR 2023)				**37,793,412**	
19	**ITEM BASED ON MARKET RATE**					
19.1	Providing and fixing machine cut, mirror polished, Granite Stone in dado, skirting, risers of steps, etc in required design and pattern wherever required, stone of different finished surface texture, on 12 mm (average) thick cement mortar 1:3 (1 cement: 3 coarse sand) and jointed with white cement slurry @ 3.3kg /sqm including pointing with white cement slurry admixed with pigment to matching shade, including rubbing, curring polishing etc. all complete as per Architecural drawings, and as directed by the Engineer-in-charge.					
19.1.1	Granite stone of any size and colour black,cherry/rubby red 18mm thick (slab area up to 0.5 sqm). etc.	63.00	sqm	4496.80	283,298	MR
19.2	Making & cutting a set of three grooves of size 3 mm wide and 4 mm depth in granite stone slab flooring in steps of staircase to make it anti skid complete as per direction of Engineer-in-Charge complete. (Note: For payment purpose length of each set shall me measured once irrespectaive of number of groves)	158.00	metre	250.05	39,508	MR

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
19.3	Providing and laying design mix cement concrete of M-30 grade, in roads/ taxi tracks/ runways, using cement content as per design mix, using coarse sand and graded stone aggregate of 40 mm nominal size in appropriate proportions as per approved & specified design criteria, providing dowel bars with sleeve/ tie bars wherever required, laying at site, spreading and compacting mechanically by using needle and surface vibrators, vacuum dewatering process, levelling to required slope/ camber, finishing with required texture, including steel form work with sturdy M.S. channel sections, curing, making provision for contraction/ expansion, construction & longitudinal joints (10 mm wide x 50 mm deep) by groove cutting machine, providing and filling joints with approved joint filler and sealants, complete all as per direction of Engineer-in-charge (Item of joint fillers, sealants, dowel bars with sleeve/ tie bars to be paid separately). (Note:- The qty of cement used for 1 cum of the finished concrete of M-30 is 340 kg. If the actual qty of cement required as per design mix is more or less than 340kg/cum, then the extra/less cement shall be paid separately. However, under no circumstnces the qty of cement to be used shall either exceed 350 kg/cum or fall below 330 kg/cum or concrete. If the cement concrete exceds or fall below the said amounts, contractor shall have the descretion to either redesign the mix or bear the cost of extra cement.)				-	MR
19.3.1	Cement concrete prepared with batch mixing machine	92.25	Cum	10452.95	964,285	MR
19.4	Providing and fixing stainless steel sliding door bolts (SS-304) of approved brand with nuts and screws etc. complete:				-	MR
19.4.1	250x16 mm	56.00	Nos.	633.55	35,479	MR
19.5	Providing and fixing stainless steel tower bolts (Grade SS-304) of approved brand with necessary screws etc. complete:				-	MR
19.5.1	250x10 mm	39.00	Nos.	342.35	13,352	MR
19.5.2	150x10 mm	17.00	Nos.	217.50	3,698	MR
19.6	Providing and fixing Stainless Steel handles (Grade SS-304) of approved quality & make with necessary screws etc all complete.				-	
19.6.1	150 mm (inner gap)	112.00	Nos.	138.85	15,551	MR
19.7	Providing and fixing magic eye approved brand and manufacturer and as per direction of Engineer-in-charge.	5.00	each	208.31	1,042	MR
19.8	Providing and fixing SS304 hasp and staple (safety type) with necessary screws etc. complete :				-	MR
19.8.1	150 mm	12.00	each	449.95	5,399	MR

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
19.9	Providing and fixing factory made single extruded WPC (Wood Polymer Composite) solid plain white colored board for cup boards, work stations and bathroom/kitchen cabinet partitions, boxes, shelves etc. of required sizes comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibers (wood powder/ rice husk/wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/cum and screw withdrawal strength of 1800 N (Face) & 900 N (Edge), minimum compressive strength 50 N/mm2, modulus of elasticity 850 N/mm2 and resistance to spread of flame of Class A category with property of being termite/borer proof, water/moisture proof and fire retardant and fixing with necessary full body threaded star headed counter sunk S.S screws, all as per direction of Engineer-In- Charge. (Note: Fitting if any shall be paid for separately)				-	
19.9.1	18 mm thick	153.00	sqm	2830.75	433,105	MR
19.9.2	25 mm thick	17.00	sqm	3717.40	63,196	MR
19.10	Providing and fixing ready made SS 304 grade Modular Kitchen basket and accessories such as right angle basket (Plain Cup & Saucer, plant, Partition, Bottle rack, Thali, Cutlery) Kitchen utensil basket, Dinner set basket, kitchen grain basket, Multipurpose basket as per site requirement including finishing (wherever required) and fittings. The same shall be fixed with neccessary stainless steel nuts & bolts. Stailess Steel screws & telescopic channel etc. as per direction of Engineer-in-charge. Payment of providing and fixing telescopic channel shall be paid separately.				-	
19.10.1	Plain Basket 420x485 mm of Godrej CAT No. 6125 or equivalent	10.00	each	2711.40	27,114	MR
19.10.2	Cutlery 420x485 mm of Godrej CAT No. 6133 or equivalent	5.00	each	3650.75	18,254	MR
19.10.3	Cup Saucer 420x100 mm of Godrej CAT No. 6130 or equivalent	5.00	each	2155.20	10,776	MR
19.10.4	Plate/Thali 420x485 of Godrej CAT No. 6137 or equivalent	5.00	each	2884.45	14,422	MR

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
19.11	Providing and fixing SS304 Reccessed type handle of size 150mm of approved make with SS crew etc. complete. as per direction of engineer in charge				-	
19.11.1	150 mm	75.00	each	422.90	31,718	MR
19.12	Providing and fixing fly proof stainless steel grade 304 wire gauge, to windows, clerestory windows & doors using wire gauge with average width of aperture 1.4 mm in both directions with wire of dia. 0.50 mm all complete.				-	
19.12.1	With UPVC beading	100.00	sqm	1561.10	156,110	MR
19.13	Providing and fixing curtain rod of 1.20 mm thick stainless tube (SS-304) with 2 No. stainless steel brackets, fixed with CP brass screws and PVC sleeves etc., i/c additional bracket at every 1.5m, end finials fixed with SS screws wherever necessary complete of approved brand and manufacturer and as per direction of Engineer-in-charge. (a) 25mm dia	100.00	metre	360.35	36,035	MR
19.14	Providing and fixing oval shape under counter wash basin with 15 mm C.P. brass long neck pillar cock, 32 mm C.P. brass waste of standard pattern, including painting of fittings, cutting and making good the walls wherever require :White Vitreous China Wash basin size 550 x 445 mm (Parryware cat no C0407 or equivalent) with a single 15 mm C.P. brass pillar tap (Jaquar Cat No. CQT-CHR-23021 B or equivalent.)	7.00	Nos.	5206.05	36,442	MR
19.15	Providing and fixing white vitreous china flat back half stall urinal of size 560x320x345 mm, with fittings, standard size C.P, spreaders with unions and clamps (all in C.P. brass) with waste couplings in C.P. brass as per IS:2556, CP brass connection pipe, including painting of fittings and cutting and making good the walls and floors wherever required :				-	MR
19.15.1	Single half stall urinal	4.00	each	4924.20	19,697	MR
19.16	Providing and fixing CP Brass towel ring of Jaquar (Cat No.ACN-CHR-1121BN) or equivalent as per the direction of engineer in charge.	10.00	each	1309.00	13,090	MR
19.17	Providing and fixing CP Brass towel rail of length 600mm of Jaquar (Cat No. ACN-CHR-1111SM) or equivalent as per the direction of engineer in charge.	10.00	each	1887.00	18,870	MR

C= NIL

I= NIL

O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
19.18	Providing GI slotted bracket size 300 mm length 75 mm width and thickness so as to projecting 75mm outside the wall surface 5 mm and fixing the bracket with two fasteners of size 10 mm dia x 80 mm long in RCC/CC/brick work at all heights i/c faastening of the CI/GI pipes of required dia using GI U- clamp of dia 10 mm with nuts and washers etc. complete as specified and as directed by Engineer-in-charge.	50.00	each	499.65	24,983	MR
19.19	Providing and fixing 10mm dia fully threaded 02 nos MS rod hangers (upto 6mm length) fixed to roof slab by means of 10x80 mm dash fasnener in fixing sotted clamp at bottom of rod by nut for holding C.I. line below slab as per direction of Engineer-in-charge.	50.00	each set	458.60	22,930	MR
19.20	Providing and fixing single equal plain junction of required degree with access door:				-	
19.20.1	100x100x100 mm				-	
19.20.1.1	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	40.00	each	831.15	33,246	MR
19.21	Cutting hole of required dia and depth upto 150 mm in RCC Slabs/beams at all floors and at all height by core cutting machine without disturbing the existing structure including removing of debris etc. directed by engineer-in-charge.				-	
19.21.1	For 100 mm nominal bore dia pipe.	30.00	each	640.70	19,221	MR
19.22	Providing and fixing C.P. brass hand shower (Health faucet) with 8 mm dia. 1 m long flexible tube and wall hook of approved quality CAT No.- ALD-563 of jaquar or equivalent in approved make as per Direction of Engineer-in-Charge.				-	
19.22.1	15 mm nominal bore.	15.00	Nos.	1345.70	20,186	MR
19.23	Providing and fixing movable goose neck CP Brass sink cock with swinging spout (wall mounted or floor mounted) CAT No. CQT 23347 of Jaquar or equivalent) of approved make and all accessories complete as per the direction of Engineer in charge.				-	MR
19.23.1	15 mm nominal dia	6.00	Each	2177.60	13,066	MR
19.24	Providing and fixing CP Brass wall mixer with provision of overhead shower with 115mm long bend pipe on upper side Jaquar Model No. CQT-CHR-23273UPR or equivalent as per the direcetion of Engineer-in-charge.				-	MR
19.24.1	15 mm nominal bore.	10.00	Each	5742.00	57,420	MR

C= NIL
I= NIL
O=NIL

AE(P)(C) .

Sl. No.	Description of Item	Quantity	Unit	Rate	Amount	DSR 2023
19.25	Providing and fixing C.P. brass bib cock with Nozzle of approved quantity & make as per the direction of engineer in charge. (a) 15mm nominal bore	5.00	each	985.65	4,928	MR
19.26	Providing and fixing C.P. brass two way bib cock of approved quality of Jaquar Model No. TQT-CHR-512AN or equivalent conforming to IS:8931 :				-	MR
19.26.1	15 mm nominal bore	14.00	each	1855.85	25,982	
19.27	Providing and fixing CP brass shower 100mm round shape multi flow (ABS body) (Model No. OHS-1989 of Jaquar or equivalent) with 160mm long arm Model No. SHA-477 of (Jaguar or equivalent) as per Direction of Engineer-in-charge.	10.00	each	2563.95	25,640	MR
19.28	Providing and Fixing Stainless Steel Door Handle 300 mm H type With nuts and Screws etc.Complete:	16.00	each	2003.40	32,054	MR
19.29	Providing and fixing concealed CP brass Push cock (Auto closing concealed urinal flush valve) for urinal flushing cistern of approved model and make by the Engineer-in-charge. (Jaquar Cat No. PRS-CHR-073 or equivalent.)	2.00	each	3368.50	6,737	MR
				Total	**40320246**	

C= NIL
I= NIL
O=NIL

AE(P)(C) .

PART- C

C=
I= } NIL
O

AE (P)(E)

PROFORMA OF SCHEDULES

(Electrical Works)

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

SCHEDULE 'A'
Schedule of quantities (sheet Attached)
SCHEDULE 'D'
Extra schedule for specific requirements/ document for the work, if any. **---------NIL----------**

SCHEDULE 'E'
Reference to General Conditions of contract. **GCC 2023 for Construction Work** as amended/modified **upto last date of the submission of tenders.**

Name of Work	**:**	**Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.**
Estimated cost of the work	**:**	
Electrical Items of Work	**:**	**Rs. 1,33,57,466/-**
i) Earnest money:	**:**	Indicated in schedule F of Civil component
ii) Performance Guarantee:	**:**	Same as in civil component
Security Deposit	**:**	Same as in civil component

SCHEDULE 'F'
General rules and directions:

Officer inviting tender — **Executive Engineer, CPWD, Varanasi.**

Definitions:

2(v)	Engineer-in-Charge	**Executive Engineer (E), CPWD, Allahabad.**
2(viii)	Accepting Authority	**Same as civil component.**
2(x)	Percentage on cost of materials and labour to cover all overheads and profits	15%
2(xi)	Standard Schedule of Rates:	DSR 2025 for electrical works & MR

C=
I= } NIL — AE (P)(E)
O

2(xii)	Department	Central Public Works Department
9(ii)	Standard CPWD contract Form GCC 2023, CPWD Form 7/8 as modified & corrected upto	**GCC 2023 (Construction Work),** CPWD form 7 as modified & corrected up to last date of submission of tender (Whether correction vide latest circulars are incorporated or not in this document)

Clause 1

(i) Time allowed for submission of Performance Guarantee, programme chart (Time and progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW welfare board or proof of applying thereof from the date of issue of letter of acceptance — **As per civil component**

(ii) Maximum allowable extension **with late fee @ 0.1% per day of Performance Guarantee amount beyond the period as provided in (i) above** — **As per civil component**

Clause 2

Authority for fixing Compensation under Clause 2 — **Superintending Engineer, CPWD, Allahabad or successor thereof.**

Clause 2 A

Whether Clause 2A shall be applicable — **No**

Clause 5

Applicable clause 5/ Clause 5A — **As prescribed in civil component**

Number of days from the date of issue of letter of acceptance for reckoning date of start Mile stone(s) as per table given below: - — **As prescribed in civil component**

S. No	Description of mile stone	Time Allowed in days (from date of start)	Amount to be with-held in case of non-achievement of milestone
	Same as prescribed in civil component.		

Time allowed for execution of work — **As per Civil**

Authority to decide

Extension of time — **Engineer-in-Charge of major component of work or successor thereof.**

Rescheduling of mile stone — **Superintending Engineer, CPWD, Allahabad or successor thereof**

Shifting of date of start in case of delay in handling over of site — **Superintending Engineer, CPWD, Allahabad or successor thereof**

C=
I=
O } NIL

AE (P)(E)

PROFORMA OF SCHEDULE Clause 5 Schedule of handing over of site

Part	Portion of site	Description	Time Period for handling over reckoned from date of issue of letter of intent
Part A	Portion without any hindrance	**As prescribed in civil component**	**As prescribed in civil component**
Part B	Portions with encumbrances		
Part C	Portions dependent on work of other agencies		

Clause 6

Computerized Measurement Book: EMB

Mode of Measurement: EMB

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. 11.00 lakh**

Clause 7A

Whether Clause 7A shall be applicable — Yes

Clause 8 Competent Authorities to inspect and issue completion certificate — **Executive Engineer, (E), C.P.W.D., Allahabad for minor component of work.**

Clause 10A

List of testing equipment to be provided by the contractor at site lab — As per list

Clause 10B(ii)

Whether clause 10-B(ii) and shall be applicable — No

Clause 10C

Component of labour expressed as percentage of value of work — **15%**

Clause 10CC — **Not Applicable**

C=
I= } NIL — AE (P)(E)
O

Clause 11

Specification to be followed for execution of work: As per CPWD Specification for electrical work specification Part-I Internal-2023, Part-II External-2023, Part-III Lift & Escalations 2003, Part-IV (Sub-station)-2013, Part-V Wet riser & Sprinkler system-2022, Part VI Fire Detection and Alarm System – 2018, Part VII D.G. Sets - 2013, Amendment (05.11.2024) & General Specifications for HVAC-2024 with up to date amendments.

Clause 12

12.2(C)

Deviation limit beyond which clause 12.2 (c) shall apply for building work — **As prescribed in civil component**

(i) Deviation limit beyond which clause 12.2 (c) shall apply for foundation work (except items mentioned in earth work subhead in DSR and related items) — **As prescribed in civil component**

(ii) Deviation Limit for items mentioned in earth work subhead of DSR and related items — **As prescribed in civil component**

Clause 16

Competent Authority for Deciding reduced rates: **Superintending Engineer, CPWD, Allahabad or successor thereof**

Clause 18

List of mandatory machinery, tools & plants to be deployed by the contractor at site — **As per attached**

Clause 19C	Authority to decide penalty for each default.	Engineer-in -charge or successor thereof
Clause 19D	Authority to decide penalty for each default.	Engineer-in -charge or successor thereof
Clause 19G	Authority to decide penalty for each default.	Engineer-in -charge or successor thereof
Clause 19K	Authority to decide penalty for each default.	Engineer-in -charge or successor thereof

Clause 25

(i)	Conciliator	**As prescribed in civil component**
(ii)	Arbitrator Appointing Authority	**As prescribed in civil component**
(iii)	Place (Seat) of Arbitration	**As prescribed in civil component**

C=
I= } NIL
O

AE (P)(E)

Clause 32

Sl. No	Minimum Qualification of Technical Representative	Discipline	Designation (Principal Technical/ Technical Representative)	Minimum Experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36(i)	
						Figures	Words
1.	Graduate Engineer or Diploma Engineer	**As prescribed in civil component**					

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

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

Clause 38

i)	a)	Schedule/ statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates 2018 printed by CPWD	**NA**
ii)		**Variations permissible on theoretical quantities**	
	a)	Cement for works with estimated cost put to tender not more than Rs. 25 lakhs. For works with estimated cost put to Tender is more than Rs. 25 lakhs	**NA**
	b)	Bitumen all works	
	c)	Steel reinforcement and structural steel Sections for diameter, section and category.	
	d)	All other materials	

C=
I= } NIL AE (P)(E)
O

ANNEXURE

Clause- 10 –A & 18

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

1.	*Steel/Aluminium Ladder 1.5 m to 8 m.*	*2 Nos.*
2.	*Chase cutting machines.*	*2 Nos.*
3.	*Electrical wire drawing equipment.*	*2 Set.*
4.	*Torque wrench for nut/bolt/screws.*	*2 Nos.*
5.	*Conduit die set.*	*2 Set.*
6.	*Pipe vice.*	*1 No.*
7.	*Bench vice.*	*1 No.*
8.	*L.T.Meggar 500/1000 volts.*	*1 No.*
9.	*Tong Tester.*	*1 No.*
10.	*Multimeter.*	*1 No.*
11.	*Hydraulically operated & hand operated crimping machine.*	*1 No.*
12.	*Earth tester.*	*1 No.*
13.	*Portable Ordinary drilling machine.*	*2 Nos.*
14.	*Portable Hammer drilling machine.*	*2 Nos.*
15.	*Overhead conduit puller.*	*1 No.*

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of E&M part of Works.

1. The tenderer should either himself meet the eligibility conditions for execution of minor component of work i.e. E&M work (i/c specialized E&M) Works or otherwise he will have to associate with agencies, fulfilling the eligibility requirements prescribed in the tender document.
2. In case the main contractor is himself eligible (as per eligibility criteria) for executing all or some components of E&M work and intends doing job himself, he may not be required to associate with another agency for such components of E&M work 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(s) within one month of award of work or 15 days before start of electrical related work whichever is earlier.
3. In case, the main contractor himself is not eligible (as per eligibility criteria) for executing any of the components of E&M work, he can directly procure the equipment of approved make from OEM and get it installed from authorized agency/service provider of the OEM or specialized agency as per criteria mentioned for associate eligible agency.
4. In case the main contractor himself is not eligible (as per eligibility criteria) and also not willing to directly procure the equipment as per para above, he will have to associate with him eligible agencies for doing such components of E&M work of work. In such cases the main contractor has to submit proposal for approval of associate agency along with documents in support of fulfilling eligibility criteria mentioned for associated agency of individual E&M components within one month of award of work or 15 days before start of electrical related work whichever is earlier.
5. In the event of the associated E&M agency not performing satisfactorily or failure of associate agency to complete the E&M work, the main contractor on written directions of the department, shall remove the Associate agency deployed on the work and shall submit proposal for approval of new associate agency without any loss of time or variation in cost to the department. Such new associate agency shall also give an undertaking along with the main tenderer that both of them shall guarantee for the equipment already supplied for which payment has been released by the department in part. If any equipment supplied for the work, during the currency of the earlier associate agency and paid partly by the department, becomes redundant /not in a position to be installed and commissioned and put to beneficial use due to change in agency for execution of E&M work, the main contractor shall be responsible for replacement of the equipment(s) at no cost to the department. No change of associate agency will be allowed without prior approval of the Engineer-in-charge of the work.
6. The main contractor shall be responsible and liable for proper and complete execution of the Electrical work and ensure coordination and completion of both civil and electrical work.
7. The associate contractor shall attend the inspection of the work by the Engineer-in-charge of E&M works as and when required.

C=
I=
O } NIL

AE (P)(E)

PROPOSAL FOR ASSOCIATING AGENCY FOR E&M WORKS

I/we hereby propose the following agency for execution of E&M work component mentioned herein. Consent Letter from the proposed associated agency is enclosed.

(i) **Name of work: Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.**

(ii) Component of E&M Work : ……. ……..

(iii) Name of Associated Agency : ……. ……..

(iv) Details of Enlistment : ……. ……..

(v) Category and Class of Enlistment : ……. ……...

(vi) Monetary limit of work in Enlistment : ……. ……..

(vii) Validity of Enlistment : ……. ……..

(viii) Copy of Enlistment Order attached : (Yes /No)

(ix) Copy of electrical contractor license attached: (Yes /No)

(x) Copy of completion certificates of similar work experience attached: (Yes /No)

(xi) Copy GST Registration attached : (Yes/No)

(xii) Copy PAN Card Attached : (Yes/No)

(xiii) Consent Letter of agency attached : (Yes/No)

Encls: Self Attested photocopies of as stated above

Seal & Signature of the Main Contractor

C=
I= } NIL AE (P)(E)
O

Eligibility criteria for main contractor /associated agency for E.I. works:

(Pdg. E.I., Fans & Service Connection)

1. The tenderer(s) must associate eligible agencies to execute components of E.I. Works who fulfill the prescribed eligibility criteria given below. However, the contractor shall also be eligible to carry out himself any or all of the components of E.I. 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 get it installed from authorized agency/service provider of the manufacturer or specialized agency as per the eligibility criteria mentioned in subsequent para.

2. **Internal Electrical Installations, External Lighting/Cabling/Earthing & Service Connection:**

    The associate agency shall be registered/enlisted in CPWD in composite category in appropriate class and should have a valid electrical license.

3. **SUBMISSION OF PROPOSAL FOR APPROVAL OF ASSOCIATED AGENCY:**

a. In support of the eligibility conditions of the proposed associated electrical agency, copy of their registration documents, Electrical Contractor's License, PAN Card, GST Registration duly attested by the applicants (Main Contractor) shall be submitted to the Engineer-in-charge of minor component for deciding the eligibility within seven days of receipt of the same. Such associating electrical agency will certify that they are not debarred as on the day of application for sale of tender.

b. Proposal for Associating Electrical Agency for the Work shall be submitted in prescribed Proforma along with Willingness Certificate & MOU enclosed herein.

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of Solar PV Power Generation System

The main agency has to associate the OEM/specialized agency **of Solar PV Power Generation System.**

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.

OR

(ii) Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.

OR

(iii) One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of "SITC of Solar PV Power Generation System".

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge **(SITC of Solar PV Power Generation System)** with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (**SITC of Solar PV Power Generation System**). 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 (**SITC of Solar PV Power Generation System**). 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 main contractor to change the agency executing such items of work and this shall be binding on the contractor.

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of Networking System

The associate agency shall be registered/enlisted in CPWD in composite category in appropriate class and should have a valid electrical license. The Registration/enlistment shall be valid on the date of MOU entered between main agency and associate agency.

The main contractor/agency has to submit detail of such agency to be associated to the Engineer-in-charge **(SITC of Networking System)** with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge **(SITC of Networking System).** In case the main contractor intends to change associated agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge **(SITC of Networking System).** The new agency/agencies shall also have to satisfy the laid down eligibility criteria mentioned above. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

The associate specialized agency should have successfully completed works, as mentioned under during last 7 years ending previous day of last date of submission of tender.

(i) Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.

OR

(ii) Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.

OR

(iii) One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of **"SITC of Networking System".**

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of Pdg. SITC of IP Based EPBAX communication system.

The main agency has to associate the OEM/specialized agency of **IP Based EPBAX communication system**

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.

OR

(ii) Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.

OR

(iii) One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of "SITC of IP Based EPBAX communication system".

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge (**SITC IP Based EPBAX communication system**) with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (**SITC IP Based EPBAX communication system**). 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 (**SITC IP Based EPBAX communication system**). 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 main contractor to change the agency executing such items of work and this shall be binding on the contractor.

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of SITC of CCTV System

The main agency has to associate the OEM/specialized agency of SITC of CCTV System.

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.

OR

(ii) Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.

OR

(iii) One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of "SITC of CCTV System".

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge **(SITC CCTV System)** with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (**SITC CCTV System**). 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 (**SITC CCTV System**). 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 main contractor to change the agency executing such items of work and this shall be binding on the contractor.

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of SITC of DG Set

The associate agency shall be registered/enlisted in CPWD in composite category in appropriate class and should have a valid electrical license. The Registration/enlistment shall be valid on the date of MOU entered between main agency and associate agency.

The main contractor/agency has to submit detail of such agency to be associated to the Engineer-in-charge **(SITC of DG Set)** with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge **(SITC of DG Set).** In case the main contractor intends to change associated agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge **(SITC of DG Set).** The new agency/agencies shall also have to satisfy the laid down eligibility criteria mentioned above. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

The associate specialized agency should have successfully completed works, as mentioned under during last 7 years ending previous day of last date of submission of tender.

(ii) Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender with capacity of individual **DG set** being 80% of individual capacity (rounded off to next available higher capacity) of the **DG set** proposed in NIT.

OR

(ii) Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender with capacity of individual **DG set** being 80% of individual capacity (rounded off to next available higher capacity) of the **DG set** proposed in NIT.

OR

(iii) One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender with capacity of individual **DG set** being 80% of individual capacity (rounded off to next available higher capacity) of the **DG set** proposed in NIT.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of **"SITC of DG Set".**

However, the composite category contractor shall also be carrying out this work himself without associating any agency provided: -

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

OR

b) He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned in the NIT.

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of SITC of Sub-station Equipments

The associate agency shall be registered/enlisted in CPWD in composite category in appropriate class and should have a valid electrical license. The Registration/enlistment shall be valid on the date of MOU entered between main agency and associate agency.

The main contractor/agency has to submit detail of such agency to be associated to the Engineer-in-charge **(SITC of Sub-station Equipments)** with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge **(SITC of Sub-station Equipments).** In case the main contractor intends to change associated agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge **(SITC of Sub-station Equipments).** The new agency/agencies shall also have to satisfy the laid down eligibility criteria mentioned above. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

The associate specialized agency should have successfully completed works, as mentioned under during last 7 years ending previous day of last date of submission of tender.

(iii) Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender with capacity of individual **Transformer** being 80% of individual capacity (rounded off to next available higher capacity) of the **Transformer** proposed in NIT.

OR

(ii) Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender with capacity of individual **Transformer** being 80% of individual capacity (rounded off to next available higher capacity) of the **Transformer** proposed in NIT.

OR

(iii) One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender with capacity of individual **Transformer** being 80% of individual capacity (rounded off to next available higher capacity) of the **Transformer** proposed in NIT.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of **"SITC of Sub-station Equipments".**

However, the composite category contractor shall also be carrying out this work himself without associating any agency provided: -

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

OR

b) He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned in the NIT.

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of Pdg. SITC of 13 passenger lift

The main agency has to associate the OEM of **13 passenger lift**

The main contractor/agency has to submit detail of such OEM to Engineer-in-charge (**SITC of 13 passenger lift**) with in fifteen days from date of start of work. The OEM shall be approved by Engineer-in-charge (**SITC of 13 passenger lift**). In case the main contractor intends to change any of the above OEM during the operation of the contract, he shall obtain prior approval of Engineer-in-charge (**SITC of 13 passenger lift**). The new OEM 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 main contractor to change the OEM executing such items of work and this shall be binding on the contractor.

1. The lift manufacturer shall comply with BIS standards, duly certified by the manufacturer itself.

2. The manufacturer shall be compliant to the Public Procurement (Preference to Make In India), Order 2017 (as amended from time to time) issued by the Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry.

3. The experience of successful completion of similar works shall be as perCPWD Works Manual/SoP. **(SITC of 13 passenger Lift)**

4. The manufacturer shall furnish an undertaking regarding availability of spares for the entire expected life of the lift i.e. 15 to 20 years.

5. The complete lift installation including its components, safety devices, various types of controls etc., testing, inspection, operation & maintenance shall conform to relevant Codes, Standards, code of practices, guidelines, safety rules, inspection manual(s), rules issued by Bureau of Indian Standards, as amended up to the last date of receipt of tenders.

6. Quality standards shall conform to latest IS/ISO-9001:2015.

7. The down time of installed lifts being maintained by the manufacturer shall not be more than 8 hours (average) in case of minor faults and 7 days (average) in case of major faults during the last one financial year.

8. The manufacture shall furnish an undertaking regarding comprehensive maintenance of lift for further 4 year after the defect liability period of one year.

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of SITC of Fire fighting System

The main agency has to associate the OEM/specialized agency of fire fighting System.

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.

OR

(ii) Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.

OR

(iii) One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of "SITC of Fire Fighting System".

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge (**SITC of fire fighting System**) with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (**SITC of fire fighting System**). 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 (**SITC of fire fighting System**). 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 main contractor to change the agency executing such items of work and this shall be binding on the contractor.

C=
I= } NIL AE (P)(E)
O

Eligibility condition for Associate agency for execution of SITC of Fire Alarm System.

The main agency has to associate the OEM/specialized agency of SITC of Fire Alarm System.

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.

OR

(ii) Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.

OR

(iii) One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of "SITC of Fire Alarm System."

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge **(SITC of Fire Alarm System)** with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge **(SITC of Fire Alarm System).** 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 **(SITC of Fire Alarm System).** 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 main contractor to change the agency executing such items of work and this shall be binding on the contractor.

Documents to be given at the time of submission of Performance Guarantee.

1. Authorization certificate from OEM.

2. Undertaking from OEM for this work for unconditional support technically throughout the execution of work contract for useful life of the system.

3. Undertaking from OEM of for this work, providing all spares required for healthy functioning of the Equipment for at least seven years from the date of supply of equipment.

C=
I= } NIL AE (P)(E)
O

ON 100 Rs. STAMP PAPER
MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN

Component of E&M WORK:----------

1] M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]

And

2] M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:

[Henceforth, called Associated Contractor]

Name of Work:- Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.

NIT No. -

Whereas the main contractor has agreed to entrust the above work 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 above work only in respect of this work. Both of us shall be responsible for the execution of above work 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.

C=
I= } NIL AE (P)(E)
O

We have further agreed as under:

1. The Associated Contactor will execute above work as per terms and conditions of this agreement.
2. All the machinery and equipment, tools and tackles required for execution of the above work, as per this MoU, shall be the responsibility of the Associated Contractor.
3. The site staff required for the execution of above work shall be arranged by the Associated Contractor as per terms and conditions of this MoU.
4. All the correspondence regarding execution of the above 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 MAIN CONTRACTOR
Date : ……
Place : ……

1. Witness with address
   (From main contractor side)

(Authorized Signatory)
SIGNATURE OF ASSOCIATED CONTRACTOR
Date : ……
Place : ……

1. Witness with address
   (From associated contractor side)

C=
I= } NIL
O

AE (P)(E)

के.लो.नि.वि.		CPWD

WILLINGNESS CERTIFICATE

Name of Work:- Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.

Component of E&M WORK:----------

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

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

Date: **Signature of Contractor**

C=
I= } NIL AE (P)(E)
O

Terms & Conditions for E&M Works

1. **Specification:-** The work shall be executed as per CPWD's general specification for Electrical Works part-I (Internal)-2023, Part-II (External)-2023, Part-III Lift & Escalations 2003, Part-IV (Sub-station)-2013, Part- V Wet Riser & sprinkler system 2020, HVAC-2024, Part- VI Fire Detection and Alarm system- 2018, Part-VII D.G. Sets- 2013 (Amendment 05.11.2024), Indian Electricity Rules, 1956, Indian Electricity Act, 2003 amended upto date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations; specifications given along with the tender shall apply.

2. **Location**:- The work is to be executed at **SIB, Jaunpur.** The Contractor is advised to visit the site before submission of their tender.

3. **RELATED DOCUMENTS**

In the case of discrepancy between the Schedule of Quantities, the Specifications and/ or the Drawings, the following order of preference shall be observed:

(i) Description of Schedule of Quantities.
(ii) Particular Specification and Special Condition, if any.
(iii) CPWD Specifications
(iv) Indian Standard Specifications of B.I.S.
(v) Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations, 2010
(vi) National Electrical Code 2023 as amended up to date and
(vii) National building code 2016 as amended up to date and Energy Conservation Building Code of India 2017 (ECBC 2017) as amended up to date.

4. **TERMINOLOGY**

The definition of terms shall be in accordance with relevant Bureau of Indian Standards of related items, Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations, 2010, National building code 2016, National Electrical Code 2023.

5. **Rates**

The work shall be treated as on works contract basis and the rates tendered shall be for complete items of work (except the materials, if any, stipulated for supply by the department) inclusive of all taxes, GST (including works contract tax, if any), duties, and levies etc. and all charges for items contingent to the work, such as, packing, forwarding, insurance, freight and delivery at site for the materials to the supplied by the contractor, watch and ward of all materials (including those, if any, supplied by the department) for the work at site etc.

Prices quoted shall be firm. Price adjustments shall however be governed by Clause 10C/ 10CC of the Conditions of Contract given in form CPWD 7 or 8 of the tender documents, for works executed under these forms. All relevant documents shall be produced by the contractor to the Engineer-in-charge, whenever called upon by him to do so, for working out such adjustments in rates.

C=
I= } NIL AE (P)(E)
O

6. **Performance Guarantee**

As per CPWD General Condition of Contract (GCC)-2023 (amended up to date). After the acceptance of tender, the contractor shall submit an undertaking from the OEM of transformer & HT Panel regarding :-

(a) Authorization certificate.

(b) The OEM is unconditionally support the lowest tenderer technically throughout the execution of contract as well as for Maintenance/ Comprehensive Maintenance Contract for the useful life of the transformer and HT panel.

(c) OEM provides all the spares required for healthy functioning of the equipment for at least seven years from the date of supply of equipment.

7. **Taxes and Duties**

Being an indivisible works contract, GST or any other taxes or duties etc. are not payable separately. The GST/works contract tax shall be deducted from the bills of the contractor as applicable in the State in which the work is carried out, at the time of payments.

8. **Mobilization Advance**

No mobilization advance shall be paid for the work.

9. **Completeness of Tender**

All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various components of the work shall be deemed to have been included in the tender, irrespective of the fact whether such items are specifically mentioned in the tender documents or not.

10. **Works to be done by the Contractor**

Unless and 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: -

(i) Foundations for equipment and components where required, including foundation bolts.

(ii) Cutting and making good all damages caused during installation and restoring the same to their original finish.

(iii) The openings/sleeves for the cables, Conduits, Pipes, ducts, rising mains etc. shall be marked in the drawing and provided during construction. No core cutting / openings in walls shall be allowed one the slab is cast or wall is constructed.

(iv) Foundation for equipment, poles, supports and brackets (other than for mounting of light fitting) and components wherever required, including foundation bolts.

(v) Suspenders and brackets for suspending/supporting cables, as required.

(vi) Suspenders for cable trays for laying the cables, where required.

(vii) Excavation and refilling of trenches in soil wherever the pipes/ cables are to be laid directly in ground, including necessary base treatment and supports for pipes as specified.

(viii) Sealing of all floor openings provided by him for pipes, earthing, rising mains and cables, from fire safety and water ingress point of view, after laying, of the same.

C=
I= } NIL AE (P)(E)
O

(ix) Painting at site of all exposed metal surfaces of the installation other than pre- painted items like fittings, poles, pipes, switchgear/ distribution gear items, cubicle switchboard etc. Damages to finished surfaces of these items while handling and erection, shall however be rectified to the satisfaction of the Engineer-in-charge.

(x) Testing and commissioning of completed installation.

(xi) Contractor has to submit detailed shop drawing for E.I. & substation equipments for approval to Engineer-in-charge before starting of work.

(xii) Provision of supports / clamps for equipments, cables etc. wherever required.

(xiii) 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.

(xiv) Closing of the cable entry points in sub-station against seepage of water, rodents etc.

(xv) Tools and tackles required for handling and installation.

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

12. **Tools for Handling and Erection**

All tools and tackles required for handling of equipment and materials at site of work as well as for their assembly and erection and also necessary test instruments shall be the responsibility of the contractor.

13. **PAYMENT TERMS**

The following percentage of contract rates shall be payable against the stages of work shown herein:

Stage of work	**Machinery and Equipment**
After initial inspection (wherever specified) and delivery at site in good condition on pro-rata basis	**70%**
On completion of installation on pro-rata basis	**20%**
On testing, commissioning and handing over.	**10%**

Original copies of supplier's GST invoice showing contract number, goods description, quantity, packing list, unit price and total amount, dispatch detail, test done at factory etc. have to be submitted by agency for ascertaining the genuinity of material source and supply.

14. **Co-ordination with Other Agencies**

The contractor shall co-ordinate with all other agencies involved in the building work so that the building work is not hampered due to delay in the work. Recessed conduit and other works, which directly affect the progress of building work, should be given priority.

15. **Care of Buildings**

Care shall be taken by the contractor to avoid damage to the building during execution of his part of the work. He shall be responsible for repairing all damages and restoring the same to

their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of his work from the site.

16. **Structural Alterations to Buildings**

16.1 No structural member in the building shall be damaged/ altered, without prior approval from the competent authority through the Engineer-in-charge.

16.2 Structural provisions like openings, cut-outs, if any, for the work, shall be used. Where these require modifications, or where fresh provisions are required to be made, such contingent works shall be carried out by the contractor at his cost.

16.3 All such openings in floors shall be closed by the contractor after installing the cables/ conduits/ rising mains etc. as the case may be, by any suitable means as approved by the Engineer-in-charge without any extra payment.

16.4 All chases required in connection with the electrical works shall be provided and filled by the contractor at his own cost to the original architectural finish of the buildings.

17. **Addition to an Installation**

Any addition temporary or permanent to the existing electrical installation shall not be made without a properly worked out scheme/ design by a qualified Electrical Engineer to ensure that such addition does not lead to overloading, safety violation of the existing system.

18. **Work in Occupied Buildings**

18.1 When work is executed in occupied buildings, there would be minimum of inconvenience to the occupants. The work shall be programmed in consultation with the Engineer-in-charge and the occupying department. If so required, the work may have to be done even before and after office hours.

18.2 The contractor shall be responsible to abide by the regulations or restrictions set in regard to entry into, and movement within the premises.

18.3 The contractor shall not tamper with any of the existing installations including their switching operations or connections thereto without specific approval from the Engineer-in-charge.

19. **Conformity to The Electricity Act 2003,**

19.1 Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations 2023

19.2 All Electrical works shall be carried out in accordance with the provisions of Indian Electricity Act,2003 and Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations 2023, amended up to date (Date of call of tender unless specified otherwise).

20. **General Requirements of Components**

SUBMISSION OF PROGRAMME

As per the time stipulated in the NIT from the date of receipt of the letter of acceptance, the successful tender shall submit a program indicating submission of drawings, supply of equipment, installation, testing, commissioning and handing over of the installation to the

Engineer-in-Charge. This program shall be framed keeping in view the milestones stipulated in the contract, wherein building progress shall be given priority.

21. **Quality of Materials**

21.1 All materials and equipment supplied by the contractor shall be new. They shall be of such design, size and materials as to satisfactorily function under the rated conditions of operation and to withstand the environmental conditions at site.

21.2 None of the material/ items/ equipment etc supplied shall be more than six months old from date of supply at site. Copy of GST Gate Pass/ Invoice/ Shipment / Custom Clearance certificate/ details (in case of imported equipment) shall be submitted to prove the date of manufacture & genuineness of the equipment/ machines supplied.

21.3 The materials shall be procured only from the manufacturers or their authorized dealers & documentary proof for such procurement & supply shall be produced by the contractor if desired by the department. The department reserves the right to send such materials to the manufacturers or authorized test laboratory to verify the genuineness & quality of the product.

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

22. Inspection of Materials and Equipment

22.1 All major equipments i.e. HT panel, transformers, bus duct, LT panel, DG sets, Lifts, Chiller, AHU etc. shall be offered for initial inspection at manufacturers works. The contractor will intimate the date of testing of equipments at the manufacturer's works before dispatch. The successful tenderer shall give advance notice of minimum two weeks regarding the dates proposed for such tests to the department's representative to facilitate his presence during testing. The Engineer-in-charge may witness such testing. The cost of the Engineer's visit to the factory will be borne by the department. Equipments will be inspected at the manufacturer/Authorised dealers premises, before dispatch to the site by the contractor if so desired by the Engineer-in-charge.

22.2 Copies of all documents of routine and type test certificates of the equipment, carried out at the manufacturers premises shall be furnished to the Engineer-in-charge and consignee.

22.3 After completion of the work in all respects the contractor shall offer the installation for testing and operation.

22.4 The Departmental officers will take adequate care to ensure that only tested and genuine materials of proper quality are used in work. Similarly, for fabricated equipment, the contractor will first submit dimensional detailed drawings for approval before fabrication is taken up in the factory. Suitable stage inspection at factory also will be made to ensure proper use of materials, workmanship and quality control.

C=
I= } NIL AE (P)(E)
O

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

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

22.7 After installation, the equipment shall be tested by the contractor, for which all consumables shall be provided by him. The inspection at site includes operation checks and any other test as necessary to check the performance of the equipments, so as to check conformity to tender specifications.

23. Ratings of Components

23.1 All components in a wiring installation shall be of appropriate ratings of voltage, current, an/frequency, as required at the respective sections of the electrical installation in which they are used.

23.2 All conductors, switches and accessories shall be of such size as to be capable of carrying the maximum current, which will normally flow through them, without their respective ratings being exceeded and compliant to related to Indian Standards (BIS).

24. Conformity to Standards

24.1 All components shall conform to relevant Indian Standard Specifications, wherever existing. Materials with ISI certification mark shall be preferred.

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

25. Interchangeability

Similar parts of all switches, lamp holders, distribution fuse boards, switch gears, ceiling roses, brackets, pendants, fans and all other fittings of the same type shall be interchangeable in each installation.

26. Dispatch of Materials to Site and their Safe Custody/ Storage/ Isurance

26.1 The contractor shall dispatch materials to site in consultation with the Engineer-in-Charge. Programme of dispatch of material shall be framed keeping in view the building progress. Safe custody/ storage of all machinery and equipment supplied by the contractor/ Associate contractor shall be the responsibility of the main contractor till final taking over by the department.

C=
I= } NIL AE (P)(E)
O

26.2 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.

26.3 All consignments are to be duly insured up to the destination from warehouse to warehouse at the cost of the contractor. The insurance cover shall be valid till the equipment from the manufacture has been supplied and erected.

27. Workmanship

Good workmanship is an essential requirement to be complied with. The entire work of manufacture/ fabrication, assembly and installation shall conform to sound engineering practice. The work shall be carried out in engineering like manner & bad workmanship shall be rejected summarily. For redoing the job, no claim of the contractor shall be entertained on this account.

28. Proper Supervision/Skilled Workmen

The contractor shall be a licensed electrical contractor of appropriate class suitable for execution of the electrical work. He shall engage suitably skilled/ licensed workmen of various categories for execution of work supervised by supervisors / Engineer of appropriate qualification and experience to ensure proper execution of work. They will carry out instructions of Engineer-in-charge and other senior officers of the Department during the progress of work. The contractor or his authorized representative shall sign the site order book & comply with the remarks entered therein by the Engineer-in-charge or his representative.

29. SAFETY CODES AND LABOUR REGULATIONS

29.1 In respect of all labour employed directly or indirectly on the work, the tenderer, here in after called the contractor, at his own expense will arrange for the safety provision outlined in section 9 of PART-IV SUB STATIONS 2013 to comply with the statuary regulations, ISI recommendations and CPWD codes, BIS recommendation, factory Act.

29.2 In case of default, the department shall be at liberty to make arrangements and provide facilities as aforesaid and recover the cost from the contractor. The contractor shall provide necessary barriers warning signals and other safety measures to avoid accidents. He shall also indemnify CPWD against claims for compensation arising out of negligence in this respect.

29.3 Nothing in these specifications shall be construed to relieve the contractor of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with applicable statutory regulations and safety codes in force from the safety angle.

C=
I= } NIL AE (P)(E)
O

30. Testing

All tests prescribed in these General Specifications, to be done before, during and after installation, shall be carried out, and the test results shall be submitted to the Engineer-in-charge in prescribed Performa, forming part of the Completion Certificate.

31. Commissioning on Completion

After the work is completed, it shall be ensured that the installation is tested and commissioned.

32. WATCH & WARD

The watch & ward of the materials & of the installations would be responsibility of the contractor till the work is completed / handed over. Nothing extra shall be paid to the contractor on this account.

33. Storage: - Responsibility for storage space for execution of work shall be of contractor.

34. SITE CLEARANCE

The site shall be cleared of malba, debris etc. due to execution of work at site by the contractor without any extra cost to the department.

35. Completion Plan and Completion Certificate

For all works completion certificate after completion of work as given in Chapter 17Appendix E of Internal 2023 (amended upto date) shall be submitted to the Engineer-in-charge. The preform as enclosed shall also be referred to for the check list, related necessary action and the testing as applicable.

Completion plan drawn to a suitable scale indicating the following, along with three print copies of the same shall also be submitted along with related soft copy in pen-drive and/ or CD.

(a) General layout of the building & Substation equipments.

(b) Locations of main switchboard and distribution boards, indicating the circuit numbers controlled by them.

(c) Position of all points and their controls.

(d) Types of fittings, viz LED, pendants, brackets, bulk head, fans and exhaust fans etc.

(e) Name of work, job number, accepted tender reference, actual date of completion, names of Division/Sub-Division, and name of the firm who executed the work with their signature.

(f) In case of non submission of proper completion drawings & documents an amount of Rs. 1,00,000/- shall be withheld.

C=
I= } NIL AE (P)(E)
O

36. Warrantee

36.1 The installation will be handed over to the Department after necessary testing and commissioning. The materials supplied by the contractor will be guaranteed against any manufacturing defect, inferior quality. The warrantee period will be for a period of 12 months from the date of handing over to the Department. 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 & building on the contractor.

36.2 The firm will be required to submit guarantee/warranty certificate of all LED fittings for 5 years from the manufacturer/OEM to the department. A certificate from OEM regarding availability of spare parts during the guarantee/warranty period shall also be submitted.

37. License, Certificate of Competency, Permit for Electrical Work

Electrical installations shall be carried out under the supervision of a person holding a certificate of competency issued by the appropriate government. The workmen shall also hold the appropriate certificate of competency issued by appropriate government. The Contractor shall also have electrical license from appropriate Government for appropriate class and voltage.

Helpers/trainees may assist licensed person on the installation work strictly under supervision of licensed person who shall allow him to work within the limited area, which has not been connected to source of electrical supply.

38. **Inspection by CEA**-: After completion of the work, the contractor will offer the same for inspection of Central Electricity Authority if required under statuary provision. The contractor will extend all help including test facilities to the representative of Central Electricity Authority. In case the contractor fails to make desired facilities available during inspection, the department reserves the right to provide the same at the risk & cost of the contractor. The observation of Central Electricity Authority which are a part of agreement will be attended by the contractor promptly. The installation will be commissioned only after receiving clearance from Central Electricity Authority. Inspection fees of Central Electricity Authority will be borne by the department.

39. INDEMNITY

The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from on the department during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

C=
I= } NIL AE (P)(E)
O

Additional Conditions for E.I. & Fans work.

1. All the Additional Terms and Condition as mentioned under "Additional Terms and Conditions for E&M works" shall be treated as part and parcel of these Additional Conditions.

2- The work shall be carried out strictly in accordance with CPWD General Specifications for Internal Electrical Works 2023 & External Work-2023 and in accordance with Indian Electricity Rules, 1956, Indian Electricity Act, 2003 as amended upto date and as per instructions of the Engineer-in-Charge including as below and nothing will be paid extra.

(a) All material shall be got approved from Engineer-in-Charge before use. One sample flat/Bay shall be made for approval of final location of switch boards/ fittings etc. and then only work shall be executed in other flats/bays.
All damages done to the building during execution of Electrical work shall be the responsibility of the contractor and the same will be made good immediately at his own cost to the satisfaction of the Engineer-in- Charge. Any expenditure incurred by the department in this condition shall be recovered from the contractor and decision of the Engineer-in-Charge about recovery shall be final.

(b) All hardware items such as screws, thimbles, G.I. wires 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 materials such as nuts/bolts/screws/ washers etc. to be used in the work shall be zinc/cadmium plated iron.

(c) CONDUIT LAYOUT shall be prepared by contractor and got approved before execution of work. In case contractor does not do so before start of work, recovery @ 2(two)% of tendered amount of I.E.I. works shall be made from the bill. Minimum No. of Junctions to be kept, & if required junctions to be kept underneath the fitting locations in corridor/rooms so that junctions are not visible after fittings are fixed/in position. Drop of conduit shall be well planned w.r.t. location of fitting/D.B. and criss crossing to be avoided. All chases in walls shall be cut using electrical chisels/cutters. For this purpose electricity shall be arranged by contractor. In case contractor fails to do chase cutting by electrical chisels/cutters and resorts to manual methods, a recovery of Rs.50/- per point shall be made from contractor's bill.

(d) Any conduit which is not to 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.
Termination of multi-stranded conductors shall be done using crimping type thimbles at both the ends. Nothing extra shall be paid for the same.

(e) All metal boxes to be applied primer and painted, then only should be installed else recovery @Rs.20/- per point should be made from contractor's bill. Boxes shall have

socket arrangement for tightening screws, instead of simple holes in M.S. sheet. Boxes shall be again painted at the time of wiring.

(f) For Submain Wiring, Colour Code for different phases and Neutral (R.Y.B. black) to be maintained. While circuit wiring, wiring for fan point, wiring for light point shall be done with different colours for easy identification. Wiring for neutral shall be done with black colour and all connections to fans & fittings wherever visible shall be made with white PVC insulated copper wire or wherever cover sleeve may be provided. At Switch board, Switch shall be fixed in a logical manner w.r.t. fittings layout.

(g) Unless specifically approved by Executive Engineer (E.), loose wire box, above DB shall not be provided however DB's shall have loose wire box of same make.
All connections to MCB's shall be made using thimble/lugs.

All DB's i/c incoming & outgoing MCB's shall be suitably numbered with PAINT for location/circuits. DB shall be fixed in recess suitably (30 mm. approx. projected from unplastered wall) to ease opening of door. Top of DB to match with door frame height as per site conditions.

(h) Phenolic laminated sheet shall be of Egg white colour, and shall be filed/rounded at edges and of minimum 3mm thick.

(i) All fittings and fans should be properly earthed through the protective conductor.

Provision of earth bars in main boards, earth terminal block in DB's & earth studs in all metal boxes shall be made, connection to this stud shall be crimped.

A clamp type termination should be made in the termination of earth strips (where provided) to pipe electrodes to provide surface type contact.

(j) The earthing shall be carried out in the presence of the Engineer-in-charge or his authorized representative.

(k) The size at switch box for providing Modular Plate type Switch/Sockets shall be properly settled to take care of all necessary switches/screws/fan regulators. Blanking plate if required shall also be provided at no extra cost.

(l) For point wiring in steel conduit all piano type switch or all modular type switches/sockets/telephone outlets/T.V. outlets shall be of only one make.

(m) Whenever supply items like fans & fittings etc. are also included in the Schedule of work, such items shall be executed only after completion of atleast 75% of the wiring items.

(n) The contractor shall make his own arrangement at his own cost for electrical/ general tools and plants required for the work.

C=
I= } NIL AE (P)(E)
O

(o) The sole responsibility about efficiency of equipment rest with the contractor. **5% (Five percent) of the cost of LED fittings & fans, motors shall be retained as Security Deposit from each bill and the amount so deducted would be released after guarantee/warranty period (i.e. 5 years & 2 years respectively) from the date of completion of the entire work under the agreement if the performance of the equipment is found satisfactory.** If any defect is noticed during the guarantee/warranty 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.

Other Additional conditions

3. The work shall be carried out according to approved drawings/details for execution of work and as per instructions of the Engineer-in-Charge who will have the right to change the layout as per requirement at site and the contractor shall not have any claim due to change in layout.

4. The work shall be carried out in engineering like manner. The bad workmanship will not be accepted and defects shall be rectified at contractor's cost to the satisfaction of the Engineer-in-Charge. The programme of electrical works are to be co-ordinated in accordance with the building work and no claim for idle labour will stipulated in the tender, electrical work shall have to be completed alongwith completion of civil work.

5. All the debris of the electrical works should be removed and the site should be cleared by the contractor immediately after the accruing of debris. Similarly any rejected material should be immediately cleared off from the site by the contractor.

6. Watch and ward of the material/equipment shall be the responsibility of the contractor till handing over of installation to the department.

7. The contractor or his representative is bound to sign the site order book as and when required by the Engineer-in-Charge and to comply with the remarks therein.

8. The entire installation shall be at the risk and responsibility of the contractor until these are tested and handed over to the department. However if there is any delay in construction from the department side, the installation may be taken over in parts, but the decision on the same shall rest with Engineer-in-Charge which shall be a binding on the contractor.

9. Some of the items of work, if already executed: on that case the successful tenderer shall have to use these items for completing the work. For wiring, the existing conduit wherever required shall be used by the contractor. The recovery will be made for these items as accepted rate of similar items.

C=
I= } NIL AE (P)(E)
O

10. The secured advance as applicable shall be allowed.

11. **Test Certificate** Test certificate for the work carried out shall also be submitted failing which recovery @1% tendered amount & maximum of Rs.1500/- shall be made from final bill.

12. **Panels:** Drawing of panel shall be submitted for approval within 30 days from award of work and fabrication to be taken up only after approval of such drawing. Before painting proper surface treatment shall be done and then powder coated. These shall be offered for inspection during fabrication.
13. Quantities indicated in Schedule of work are only tentative; contractor shall consult AE-in-Charge before procurement. Payment shall be made only for the quantities actually executed and measured.

14. **Time Period**: Contractor has to plan his activities, so that electrical work is to be carried out in close co-ordination with CIVIL work and in no case CIVIL work be delayed because of delay in electrical work and the work has to be completed accordingly.
15. The makes for items shall be as per list attached.

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

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

18. Contractor is advised to visit site before quoting rates for determining site conditions. No claim or argument shall be entertained in this regard at later stage.

19. Required repairing and finishing work is to be done by agency after installation of split air conditioners.

20. The contractor shall make his own arrangement at his own cost for electrical / general tools and plants required for the work.

21. The rates of all items of work shall unless clearly specified otherwise, includes the cost of all labour, materials and other input involved in the execution of work.

22. Central / State Sales Tax / Contract Tax / Excise Duty, GST etc. should be included in the rates tendered. Statutory deductions of contract tax at source shall be made while releasing payment through running/final bills. A certificate specifying the rate and amount of deduction shall however be issued. No Form 31/32 (road permit) shall

C=
I= } NIL AE (P)(E)
O

be issued by the department. The road permit shall be arranged by the tenderer at his own.

23. All U.G. Cable work shall be got inspected and measurements lest checked by the Assistant Engineer in charge of work and his authorized representative before filling up the trenches, failing which work remain subject to 100% recheck at the risk and cost of the contractor.

24. All U.G. Cables before laying shall be got tested for continuity in presence of the authorized representative of the Engineer-in-Charge. Note to this effect shall be given in site order book.

25. Route of the U.G. Cables shall be got approved from the Engineer-in-Charge or his authorized representative.

26. Earthing shall invariably be done in the presence of the Engineer-in-Charge pr his authorized representative.

27. Completion Plan: Contractor shall submit completion plan (for works costing more than Rs.1/- lacs in triplicate before finalization of bill failing which recovery @2.5% subject to maximum of Rs.15000/- shall be made from final bill. Contractor has to submit SLDs & layout plan in triplicate in Dwd.pdf & A0 size hard copies in triplicate duly signed and checked by the concerned JE/AE.

28. Notwithstanding the schedule of quantities, all items of interrelated works consider necessary to make the installation complete and operative are deemed to be included shall be provided by the contractor at no extra cost.

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

C=
I= } NIL AE (P)(E)
O

Terms & Condition of Solar PV Power Generation System

1. GENERAL

These special conditions are intended to amplify the General Conditions of Contract, and shall be read in conjunction with the same. For any discrepancy between the General Conditions and these Special Conditions, the more stringent shall apply.

2. SCOPE OF WORK

The general character and the scope of work to be carried out under this contract is illustrated in Schedule of work & Specifications. The Contractor shall as a System Integrator for providing an end to end Solution for the above, including but not limited to design, supply, erect, testing , commissioning of the required Solar Photo Voltaic power plant with accessories, peripherals like Power conditioning units, cables, cable tray, junction boxes, Cable termination & connections sockets & other suitable accessories, earthing, DC system & Bus etc. and installation, performance testing, commissioning, warranty, annual maintenance, etc. The bidders have to ensure the planning and smooth execution of the project. The Contractor shall carry out and complete the said work under this contract in every respect in conformity with the contract documents and with the direction of and to the satisfaction of the Engineer in charge. The contractor shall furnish all labour, materials and equipment as listed and specified otherwise, transportation and incidental necessary for supply, installation, testing and commissioning of the complete system through as described in the Specifications.
The work shall also includes interfacing the PV Plant with the Grid equipments.

2.1 SOLAR PV PANEL / SYSTEM

a. Supply, Installation, testing and commissioning of Solar PV modules (inclusive of Electrical, Electronic and mechanical features).

b. The installation shall include the electrical wiring, cabling, terminations, cable trays, string inverters, suitable clamping/installation arrangement to existing steel frame structure/terrace

c. Supply and installation Module mounting on the aluminum/GI/steel super structure frames on identified locations.

d. The PV modules shall be installed with the necessary tilt with most effective orientation.

e. Supply and installation Junction Boxes, fuse boxes/circuit breakers, isolation diodes etc.

f. Supply and installation Power Conditioning Unit (PCU).

C=
I= } NIL AE (P)(E)
O

g. Supply and installation Cables on pre-fabricated GI cable trays with covers and / or within suspended ceiling spaces including installation, cable trays, hangers, supports, cable terminations and all fixing accessories (Terrace to plant room inclusive of PVC Sleeves/ other accessories etc. wherever required.)

h. Supply and installation of Earthing with copper / GI conductor with testing joint for every pits (Grounding) System.

j. Solar System capacity shall be calculated as per area along with drawings. The solar system capacity shall be based on the site conditions & considering all the parameters during the operation & maintenance.

k. Supply and installation and Testing of entire system in due coordination with other agencies as involved in the projects i/c Local bodies. The Executing agency shall do connected work for integration of solar system with the grid.

l. The system must be capable of logging all parameter (both A.C. & D.C.) like generated power in kW/kVA, voltage, current, Energy, Solar Insolation (Electronic/Multifunctional).

m. The system must be capable of upgrading at a later stage as and when required by the Deptt.

n. Supply and laying of power /control cables from PV power panel to plant room Main Solar LT panel including cables within terraces to main PV panels (AC / DC Power).

o. Contractor shall design their SPV Panel fixing structure & arrangement according to available RCC roof/ space frame.

p. Data networking cabling as per site requirement.

q. Metering and protection/Isolating/earthing systems.

r. Earthing system for PV array, DC power system, lightening protection system, AC power system, equipment, PCU etc.

t. All relevant drawings, data sheets, technical catalogues on each piece of equipment/devices and routine acceptance & type test certificates.

u. Materials and accessories, which is necessary or usual for satisfactory and trouble free operation and maintenance of the above equipment.

v. The bidder must be total integrated system integrator including power conditioning unit, solar charge controller and structure.

C=
I= } NIL AE (P)(E)
O

w. 1.1 kV Cu. XLPE cable for DC supply system. (From solar array box, intermediate junction box to main junction box and main junction box to power conducting units.

x. 1.1 kV XLPE cable from for AC supply system from PCU to main solar panel.

aa. The all Sunday materials, being, cable trays, wiring, cabling, connectors, conduits, junction boxes, insulation etc. as required for safe & efficient wincing of installation is deemed to be included in scope of work.

bb: The items of civil erection work shall be performed with respect to the following but not limited to

i. Solar PV array to existing space frame/terrace.

ii. Power Cables

iii. Entire cable tray/ cable supporting arrangement inside control room & anywhere in the installation.

iv. Fabrication, supply & erection of cable trays, support, brackets and accessories case of site fabricated cable tray

v. Galvanized steel rigid /flexible conduits and accessories, hume pipes, ferrules, lugs, glands, terminal blocks, galvanized sheet steel junction boxes, cable fixing clamps, nuts and bolts etc. as required.

vi. Supply of necessary steel material for field fabrication of cable trays, support brackets, grounding system etc.

vii Cutting the holes, chases & like through all types of walls/ shafts/ floors, & finishing for all services crossing, i/c sealing, frame works, fire proofing, providing sleeve, cover plates making good structure & finishes to an approved standard.

3. BYE-LAWS AND REGULATIONS

The installation shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities/ Govt of India/ State Govt/ Any statuary body concerned, in so far as these become applicable to the installation. But if these Specifications and Drawings call for a higher standard of materials and / or workmanship than those required by any of the above regulations and standards, then these Specifications and Drawings shall take precedence over the said regulations and standards. However, if the Drawings and specifications violate the Bye-laws and Regulations, then the Bye-laws and Regulations shall govern the requirement of this installation. The installation shall also confirm to Indian electricity act & rules, CPWD specification

for Substation work & internal electrical work, BIS specification, State power distribution co. rules, etc.

4. FEES AND PERMITS

The tenderer shall obtain all permits/ licenses approvals and pay for any and all fees required for the inspection, approval and commissioning of their installation from concerned statutory/ Local bodies/ authorities The all inputs & material as required & all necessary Liaoning with all concerned authorities/officers for obtaining them the required permits/ permission/ NOC shall be provided by the contractor & included in the scope of the work. However, all statutory fees/ amount deposited by contractor shall be reimbursed on production of proof of payment to the satisfaction of Engineer in charge.

5. AWARENESS OF SITE CONDITIONS AND SITE INSPECTION PRIOR TO TENDER SUBMISSION

Prior to the preparation and submission of this tender, the contractor shall make visits to the site and carry out all the necessary inspections and investigations in order to obtain all information and to make his own assessment of the conditions and constraints at site including the means of access (requirement of scaffolding, safety belts, helmet and other necessary item as required) to Solar system installation. The contractor shall make himself aware of all the features of the site, working conditions and shall be responsible for obtaining all the necessary required information needed for him to prepare and submit his tender.

6. CO-ORDINATION WITH OTHER CONTRACTORS AND AGENCIES

The contractor during the execution of the works shall co-ordinate with other agencies associated work with the project and shall work in harmony with them without causing any hindrance or obstruction on the progress of work in any way.

7. SHOP DRAWINGS

All shop drawing shall be prepared on computer through Autocad system based on Architectural drawings and site measurement within award of work. Contractor shall furnish for the approval of the Engineer in charge, detailed shop drawings of all equipment and material giving following information.

i. Certified foundation details

ii. Layout of PV arrays and associated equipment, panels.

iii. Cable & Cable tray layout.

v. Single line diagram, control schematic showing make type and description of all components and accessories.

C=
I= } NIL AE (P)(E)
O

7.1 These shop drawings shall contain all information required to complete the Project as per specifications and as required by the Engineer in charge. 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 3 sets of drawings shall be submitted after final approval along with soft copy.

Each item of equipment/material proposed shall be a standard catalogue product of an established manufacturer strictly from the manufacturers listed in Appendix.
When the Architect/Consultant \Engineer in charge makes any amendments in the above shop drawings, the contractor shall supply 3 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 for final approval to the Engineer in charge for the exclusive use by the Engineer in charge and all other agencies.

7.2 Shop drawings shall be submitted for approval a week in advance of planned delivery and installation of any material to allow 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.

7.4 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 supercede 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.

7.5 Where the contractor proposes to use an item of equipment, other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundation, wiring or any other part of the mechanical, electrical or architectural layouts; all such re-design, and all new drawings and detailing required therefore, shall be prepared by the contractor at his own expense and gotten approved by the Engineer in charge. Any delay on such account shall be at the cost of and consequence of the Contractor.

7.6 Where the work of the contractor has to be installed in close proximity to, or shall interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Engineer in charge, the contractor shall prepare composite working drawings and sections at a suitable scale, not less than 1:50, clearly showing how his work is to be installed in relation to the work of other trades. If the Contractor installs his work before coordinating with other trades, or so as to cause any interference with work of other trades, he shall make all the necessary changes without extra cost to the Engineer in charge.

C=
I= } NIL AE (P)(E)
O

7.7 Within one week of approval of all the relevant shop drawings, the contractor shall submit four copies of a comprehensive variation statement in quantity, and itemized price list of recommended (by manufacturers) imported and local spare parts and tools, covering all equipment and materials in this contract. The Engineer in charge shall make recommendation for acceptance of anticipated variation in contract amounts and also advise to initiate action for procurement of spare parts and tools at the completion of project.

8. COMPLETION DRAWINGS

Contractor shall periodically submit completion drawings as and when work in all respects is completed in a particular area.

9. QUIET OPERATION AND VIBRATION ISOLATION

All equipment shall operate under all conditions of load without any sound or vibration which shall not be objectionable in the opinion of the Services Consultant / Client / Engineer in charge's site representative. In case of rotating machinery sound or vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, shall be considered objectionable. Such conditions shall be corrected by the Tenderer at his own expense. Acceptable noise control level at what distance. The tenderer shall guarantee that the equipment installed shall maintain the desired Noise Control levels.

10. ACCESSIBILITY

The Tenderer shall verify the sufficiency of the size of the shaft openings, clearances in cavity walls and suspended ceilings for proper installation of his cabling and other ancillaries. His failure to communicate insufficiency of any of the above shall constitute his acceptance of sufficiency of the same**.** The Tenderer shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. Failing this, the Tenderer shall make all the necessary repairs and changes at his own expense. Access panel shall be standardized for each piece of equipment / device / accessory and shall be clearly nomenclature / marked.

11.1 **Operating Instruction & Maintenance Manual**

Upon completion and commissioning of entire system **t**he contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 15 year period of maintenance of each equipment. These manuals shall include:

i. Description of the work carried out / installed.
ii. Operating instructions.
iii. Maintenance instructions including procedures for preventive maintenance.
iv. Manufacturers catalogues.

C=
I= } NIL AE (P)(E)
O

v. Spare parts list.
vi. Trouble shooting charts.
vii. Drawings
viii. Type and routine test certificates of major items.

12. INSPECTION AND TESTING

The Engineer in charge / of his Authorized representative may carry out inspection and testing at manufacturer's works. No equipment shall be delivered without prior written confirmation from Engineer in charge. The contractor has to make all arrangement for inspection at factory/ Site. However the deptt will bear all cost related to their officers travelling, lodging, boarding, etc. Upon completion of work the performance test shall demonstrate the following among other things:

i. Equipment installed complies with specification in all respects and is of the correct rating for the duty and site conditions.

ii. All items operate efficiently and quietly to meet the specified requirements as per the warranty /guaranty.

iii. All circuits are correctly protected /modify as per the site protective devices are properly coordinated.

iv All non current carrying metal parts are properly and safely grounded in accordance with the specifications and appropriate codes of practice.

V All equipments shall also compliance the performance requirements as per Contract requirement.

The contractor shall provide all necessary, material, samples, instruments and labour for testing. He shall make adequate records of test procedures and readings and shall repeat any tests requested by the Consultant/ Engineer in charge. Test certificate duly signed by a authorized person shall be submitted for scrutiny.

If it is proved that the installation or part thereof is not satisfactorily carried out then the contractor shall be liable for the rectification and retesting of the same as called for by the Engineer in charge / Consultant. All tests shall be carried out in the presence of representative of Consultant /Engineer in charge/Third party commissioning Agent.

The above general requirements as to testing shall be read in conjunction with any particular requirements specified elsewhere. All tests shall be carried out by a test house approved by the Engineer in charge / Consultant.

The system shall be tested in the presence of Engineer in charge's representative at Supplier's works in accordance with latest prevailing standards and codes if needed. The successful passing of any such tests will not however prejudice the right of Purchaser to reject the system and its accessories, if they do not comply with specifications when erected or perform complete satisfactory operation as intended.

C=
I= } NIL AE (P)(E)
O

Supplier shall provide the test certificate for the bought out items used, if any in the assembly of PV system including all associated accessories.

13. MATERIALS AND EQUIPMENT

All materials and equipment shall conform to the relevant Indian/International Standards and shall be of the approved make and design. Makes shall be strictly in conformity with list of approved manufacturers as per Appendix.

14. COMPLETION CERTIFICATE

On completion of the installation, a certificate shall be furnished by the contractor countersigned by the licensed electrical supervisor under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local supply authority/ Electrical inspector.

15. TRAINING OF ENGINEER IN CHARGE'S PERSONNEL FOR OPERATION AND MAINTENANCE

Upon completion of all work and all tests, the Contractor shall furnish necessary operators, labour material and helpers for operating the entire installation for a defect liability period of one (1) years after successful completion & handling over of work of ten (10) hours each, to enable the site staff to get acquainted with the operation of the system. During this period, the contractor shall train the Engineer in charge's personnel in the operation, adjustment and maintenance of all equipment installed**.**

16. GUARANTEE & Defect liability Period

1. In suppression of maintenance period mentioned as one year under clause 17 GCC all equipments shall be guaranteed/ Warranty for a period of 05 years from the date of successfully completion of work i/c integration with Grid & taking over the installation by the department against unsatisfactorily performance and/or break down due to defective design, workmanship of material. The equipment 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. The contractor has to carry out routine and preventive maintenance for 12 months from the date of handing over. Nothing extra shall be paid.

2. The Maintenance period (Defect liability period) shall be 01 Years after successfully completion of the work i/c integration with the grid & handing /taken over. This DLP requirement will override the other provision related to period of DLP elsewhere mentioned in the NIT/ tender documents.

The contractor shall hold himself fully responsible for reinstallation and / or replacement, free of cost for the following:

a. Any defective work or material or equipment supplied by the Contractor.

C=
I= } NIL AE (P)(E)
O

b. Any material or equipment supplied by the other agency which is damaged or destroyed as result of defective workmanship by the contractor.

c. In case of failure of the supplier, to get any defect rectified within forty eight (48) hours, the Engineer in charge reserves the right to get necessary repairs done on his own at the supplier cost.

17. UPTIME GUARANTEE

The Contractor shall provide log in the form of CD and bound printed comprehensive log book containing tables for daily record of power generation. starting and stopping times for various equipment, daily services rendered for the system alarms, maintenance and record of unusual observations etc. Contractor shall also submit preventive maintenance schedule.

18. DEMONSTRATION TO ENGINEER IN CHARGE

Upon completion, devices subject to third party commissioning Agent manual operation shall be operated atleast five times in presence of Engineer in charge / Consultants to demonstrate satisfactory operation.

The contractor shall provide performance tests upon completion of the installation. He shall arrange all necessary instruments, tools and tackles to check sound level, vibration and the effectiveness of equipments installed.

19. TOOLS AND TACKLES

The Contractor shall provide and install all necessary hoists, ladders, scaffolding, tools, tackles, transportation of labour and materials necessary for the proper execution and completion of the work to the satisfaction of the Consultants /Engineer in charge.

20. ACCEPTANCE TEST

a. The user acceptance test shall be carried out if required as per mutually agreed acceptance test plan against the system requirement specified in the tender.

b. During warranty period, supplier guarantees in uptime of 98.5 % and response time will be 4 to 6 hours. If the contractor is unable to full fill these requirement, penalty equal to 1 % of contract value shall be imposed.

21. APPROVAL & CLEARANCE

All associated activities required for necessary clearances / permissions / approvals / licenses from concerned Electrical authorities so their govt / strategy / local bodies are in the scope of supplier.

22. Execution of Work Electrical:

The contractor shall possess the valid electrical license for carrying out electrical work.

23. The contractor has to submit all documentary proof/evidences e.g Factory gate pass, bills, vouchers, custom & excise certification & clearances, Transport & transit

records, Performance, routine, acceptance & other tests carried out at factory etc & or any documents as desired by Engineer in Charge for establishing the originality of make of material & performance to the satisfaction of Engineer in charge.

24. The contractor has to arrange & made available all assistance, tools, machinery, equipments at site for installation, testing, commissioning & **Operation** & maintenance.

25. The Safety & Security of the all Equipments & Installation during execution as well as during Operation & Maintenance period shall be of the Contractor. The Contractor has to make all arrangement for the same. Nothing extra will be paid for the same.

C=
I= } NIL AE (P)(E)
O

ADDITIONAL TERMS AND CONDITIONS FOR NETWORKING SYSTEM

1. The work shall be carried out in accordance with the General specification for Electrical works of CPWD Part-I (internal) 2023 & Part-II (external)2023 amended up to date and relevant I.E rules & as per directions of Engineer-in-Charge.

2. **Following authorizations shall be made available from OEM: -** The lowest tenderer shall submit along with the MOU after the award of work, an undertaking from the OEM regarding.

   a) Authorization certificate.

   b) The OEM shall unconditionally support the lowest tenderer technically throughout the execution of contract as well as for Maintenance/Comprehensive Maintenance Contract for the useful life of the system.

   c) OEM shall provide all the spares required for healthy functioning of the equipment for at least seven years from the date of supply of equipment.

   d) Networking System Products should be with minimum one year warranty from the date of handing over.

3. Based on the makes and models intended to be supplied from the acceptable list of makes and prior to the commencement of work, the Bidder shall submit their technical proposal for approval, consisting of the following:

   a. Shop drawings consisting of equipment layouts.

   b. Shop drawings consisting of schematic layouts.

   c. Shop drawings consisting of conduit layouts & cable routing plan.

   Upon completion of work and prior to handover, the Bidder shall submit 3 sets of as-built drawings and documentation as mentioned below:

   a. Final equipment layouts– AutoCAD & pdf format.

   b. Final schematic layouts - AutoCAD & pdf format.

   c. Final conduit layouts - AutoCAD & pdf format.

   d. Final cable routing plan – cable schedule, cable IDs, labelling and documentation, type of cable, no. of cables etc. - AutoCAD & pdf format.

4. The work is to be carried out in workman like manner & generally in accordance with the plans and in coordination with ongoing civil work.

5. All chases, holes, recess etc. for conduits & other allied work shall be done to the original finish as per requirement without any additional cost. The contractor shall coordinate with all other agencies involved so that building work is not hampered.

C=
I= } NIL AE (P)(E)
O

6. All damages to the building made by the contractor shall have to be made good to its original finish as per the requirement within tender amount. The sealing of all floors opening provided by him for pipe and cables, from the safety point of view shall be done by the firm.

7. The quoted rates should be inclusive of all taxes, levies, works contract taxes, GST, packing, transportation, handling, duties etc. Nothing extra will be paid on this account.

8. All hardware, fastening material viz nuts, bolts, washer and screws etc to be used on work shall be of zinc/cadmium plated iron.

9. All the material to be used on the work should be of good quality and shall be got approved from the Engineer-in-Charge or his authorized representative before using on work. The rejected material shall have to be replaced by the contractor at his own cost and the same shall be removed from the site immediately. The sample of the item shall have to be submitted in advance for this purpose. List of approved makes is enclosed.

10. No T& P shall be issued to the contractor.

11. The Contractor is advised to visit the site of work to have an idea of the execution of the work, failure to do so will not absolve their responsibility to do the work as specified in agreement.

12. The contractor has to make his own arrangement for the safety of his workmen. Department shall not be responsible in case of any accident taking place during the work.

13. The site / quarters shall be cleaned & all malba, debris caused by working at site shall be cleared of without any extra cost to the department.

14. Material shall be procured only after assessing exact quantity at site in consultation with Engineer-in-charge. The quantities taken in schedule of work are tentative.

15. Bad workmanship is liable to be rejected.

C=
I= } NIL AE (P)(E)
O

Additional condition for IP Based EPBAX system

1.1. RATES

The rates quoted by the tenderer, shall be firm and inclusive of all taxes (including GST), duties and levies and all charges for packing, forwarding, insurance, freight and delivery, installation, testing, commissioning etc. at site including temporary constructional storage, risks, overhead charges, general liabilities/ obligations etc.

1.2. MACHINERY FOR ERECTION

All tools and tackles required for unloading / handling of equipment and materials at site, their assembly, erection, testing and commissioning shall be the responsibility of the contractor.

1.3. CONFORMITY WITH STATUTORY ACTS, RULES, ORDERS, STANDARDS ANDCODES

1.3.1. All components and their installation shall conform to relevant Indian Standard Specifications, wherever existing, amended to date.

1.3.2. As per Public Procurement (Preference to Make in India) Order (PPP-MII Order), inclusion of foreign standards/certification in tenders, thereby excluding local manufacturers is violative of the Order.

1.3.3. Therefore, utmost care shall be taken to stipulate Indian Standards/certifications instead of foreign standards/certifications for various products/materials in the tender documents. In all cases, the PPP-MII Order 2017 as amended shall be strictly complied.

1.3.4. All electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 2003 and Electricity Authority (Measures Relating to Safetyand Electric Supply) Regulations, 2010, NEC 2011 amended to date. They shall also conform to CPWD General Specifications for Electrical Works, Part-I (Internal)-2013, Part-II (External)- 1994, amended to date.

1.5 SAFETY CODES AND LABOUR REGULATIONS

(i) In respect of all labour employed directly or indirectly on the work for the performance of the firefighting contractor's part of work, the contractor at his own expense, will arrange for the safety provisions as per the statutory provisions including "Safety, Health and Environment Handbook 2019" published by CPWD, B.I.S recommendations, Factory Act, Workman's

C=
I= } NIL AE (P)(E)
O

Compensation Act, CPWD Code and instructions issued from time to time. Failure to provide such safety requirements would make the tenderer liable for penalty to be decided by Engineer-in-charge. In addition, the Engineer-in- charge, shall be at liberty to make arrangements and provide facilities as aforesaid and recover the cost incurred thereon from the contractor.

(ii) The contractor shall provide necessary barriers, warning signals and other safety measures while laying pipelines, cables etc. or wherever necessary so as to avoid accident. He shall also indemnify CPWD against claims for compensation arising out of negligence in this respect. Contractor shall be liable, in accordance with the Indian Law and Regulations, for any accident occurring due to any cause. The department shall not be responsible for any accident occurred or damage incurred or claims arising there from during the execution of work. The contractor shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the contractor due to the above provisions thereof.

1.6. COMPLETENESS OF THE TENDER, SUBMISSION OF PROGRAMME, APPROVAL OF DRAWING AND COMMENCEMENT OF WORK

1.6.1. Completeness of the tender:

All sundry equipment, fittings, assemblies, accessories, hardware items, foundation bolts, supports, termination lugs for electrical connections, cable glands, junction boxes and all other items which are useful and necessary for proper assembly and efficient working of the various equipment and components of the work shall be deemed to have been included in the tender, irrespective of the fact whether such items are specifically mentioned in the tender or not.

1.6.2. Submission of programme:

Within fifteen days from the date of receipt of the letter of award, the success fultenderer shall submit his programme for submission of drawings, supply of equipment, installation, testing, commissioning and handing over of the installation to the Engineer-in-Charge. This programme shall be framed keeping in view the building progress and the Milestones fixed in Schedule 'F' Clause-5 of General Conditions of Contract.

1.6.3. Submission of Drawings:

The contractor shall submit the drawings to the Engineer-in-Charge as per specification for approval within 60 days from the start of work.

C=
I= } NIL AE (P)(E)
O

1.6.4. Commencement of work:

The contractor shall commence work as soon as the drawings submitted by him are approved either in full or in part as the case may be.

1.7. DISPATCH OF MATERIALS TO SITE AND THEIR SAFE CUSTODY

The contractor shall dispatch materials to site in consultation with the Engineer-in- Charge. Suitable lockable storage accommodation shall be made available free of charge temporarily. Watch and ward however, shall be the responsibility of contractor. Programme of dispatch of material shall be framed keeping in view the building progress. Safe custody of all machinery and equipment supplied by the contractor shall be the responsibility of the contractor till final taking over by the department.

1.8. CO-ORDINATION WITH OTHER AGENCIES

The contractor shall co-ordinate with all other agencies involved in the work so that the work of other agencies is not hampered due to delay in his work.

1.9. QUALITY OF MATERIALS AND WORKMANSHIP

1.9.1. The components of the installation shall be of such design so as to satisfactorily function under all conditions of operation.

1.9.2. The entire work of manufacture/fabrication, assembly and installation shall conform to sound engineering practice.

1.9.3. All equipment and materials to be used in work shall be manufactured in factories of good repute having excellent track record of quality manufacturing, performance and proper after sales service.

1.10. CARE OF THE BUILDING

Care shall be taken by the contractor during execution of the work to avoid damage to the building. He shall be responsible for repairing all such damages and restoring the same to the original finish at his cost. He shall also remove all unwanted and waste materials arising out of the installation from the site of work from time to time.

1.11. INSPECTION AND TESTING

1.11.1. Initial inspection of materials and equipment at manufacturer's works may be done by the Engineer-in-Charge or his representative. For item/ equipment requiring initial inspection at manufacturer's works, the contractor will intimate the date of testing of equipment at the manufacturer's works before dispatch. The contractor shall give sufficient

advance notice regarding the dates proposed for such tests to the department's representative(s) to facilitate his presence during testing. The Engineer-in-charge at his discretion may witness such testing. Equipment will be inspected at the manufacturer/ authorized dealer's premises, before dispatch to the site by the contractor.

1.11.2. The department also reserves the right to inspect the fabrication job at factory and the successful tenderer has to make arrangements for the same.

1.11.3. The materials duly inspected by Engineer-in-Charge or his authorized representative shall be dispatched to site by the contractor.

1.11.4. No additional payment shall be made to the contractor for initial inspection/testing at the manufacturer's works by the representative of the Engineer-in-Charge. However, the department will bear the expenses of its representative deputed for carrying out initial inspection/testing. Safety Measures All equipment shall incorporate suitable safety provisions to ensure safety of the operating personnel at all times. The initial and final inspection reports shall bringout explicitly the safety provisions incorporated in each equipment.

1.12. GUARANTEE

1.12.1. All equipment shall be guaranteed for a period of 60 months from the date of completion of entire scope of agreement. The equipment or component or any part thereof so found defective during the guarantee period shall be 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 Engineer- in-charge in this regard shall be final.

1.13. TENDER DRAWINGS, DRAWINGS FOR APPROVAL AND COMPLETION DRAWINGS

2.12.1 Tender Drawings

The drawings appended with the tender documents are intended to show the areas allotted for various equipment, tentative pipe routes. The equipment offered shall be suitable for installation in the spaces shown in these drawings.

C=
I= } NIL AE (P)(E)
O

2.12.2 Drawings for approval on award of the work

The contractor shall prepare and submit following drawings and get them approved from the Engineer-in-charge before the start of the work. The approval of drawings however does not absolve the contractor of his responsibility to supply the equipment/materials as per agreement. In case of any contradiction between the approved drawings and agreement the decision of the Engineer-in-Charge shall be final and binding on the contractor.

2.13.3 Completion Drawings

Three sets of the following laminated drawings shall be submitted by the contractor while handing over the installation to the Department. Out of this one of the sets shall be laminated on a hard base for display in the fire control room. In addition, one set will be given on compact disc.

(a) Installation drawings giving complete details of all the equipment.
(b) Line diagram and layout of all the telephone outlets in the building and outsidebuilding cable layouts.
(c) OFC cabling drawings with all control components.

2.13 DOCUMENTS TO BE FURNISHED ON COMPLETION OF INSTALLATION

Three sets of the following documents shall be furnished to the department by thecontractor on completion of work:-

(a) Completion drawings.
(b) 3 sets of manufacturer's technical catalogues of all equipment and accessories.
(c) Operation and maintenance manual of all major equipment, detailing all adjustments, operation and maintenance procedure.
(d) Name plate details of all equipment.

C=
I= } NIL AE (P)(E)
O

Terms & Conditions for CCTV and camera system work

1. **All the Additional Terms and Condition as mentioned under "Additional Terms and Conditions for E&M works" shall be treated as part and parcel of these Additional Conditions.**

2. CCTV System to be monitored from central control room.

3. All the CCTV Equipments like Cameras, vandal dome housings, Software and Network Video Recorder should be of same approved make to have better compatibility and should be UL/EN Listed. The agency using different makes for different components will not be acceptable. The firm must submit a letter from equipment manufacturer that the model of CCTV equipments quoted by them is in continuous process of manufacturing.

4. Item must be complete with all equipments and required accessories along with necessary power systems, vide connector, plugs, sockets and hardware/software as required for complete installation of the system under this contract and present scope of work.

5. Based on the makes and models intended to be supplied from the acceptable list of makes and prior to the commencement of work, the Bidder shall submit their technical proposal for approval, consisting of the following:

   a. Shop drawings consisting of equipment layouts.

   b. Shop drawings consisting of schematic layouts.

   c. Shop drawings consisting of conduit layouts & cable routing plan.

   Upon completion of work and prior to handover, the Bidder shall submit 3 sets of as-built drawings and documentation as mentioned below:

   a. Final equipment layouts– AutoCAD & pdf format.

   b. Final schematic layouts - AutoCAD & pdf format.

   c. Final conduit layouts - AutoCAD & pdf format.

   d. Final cable routing plan – cable schedule, cable IDs, labelling and documentation, type of cable, no. of cables etc. - AutoCAD & pdf format.

6. The firm should visit the site before quoting their rates so as to satisfy themselves with all site working conditions, cable routes etc.

7. The firm intending to participate in tender should confirm that the manufacturer of CCTV system offered by them should have own authorized service centre in northern region.

C=
I= } NIL AE (P)(E)
O

8. The associated agency must have experience in SITC work of networked cameras with OEM NVR and their integration at its own.

9. **Following authorizations shall be made available from the CCTV manufacturer: -** The lowest tenderer shall submit alongwith the MOU after the award of work, an undertaking from the OEM regarding.

a) Authorization certificate.

b) The OEM shall unconditionally support the lowest tenderer technically throughout the execution of contract as well as for Maintenance/Comprehensive Maintenance Contract for the useful life of the system.

c) OEM shall provide all the spares required for healthy functioning of the equipment for at least seven years from the date of supply of equipment.

d) CCTV System Products should be with minimum one year warranty from the date of handing over.

C=
I= } NIL AE (P)(E)
O

Additional Terms & Conditions for DG Set work

1. **All the Additional Terms and Condition as mentioned under "Additional Terms and Conditions for E&M works" shall be treated as part and parcel of these Additional Conditions.**

2. **Acceptable makes for different equipments:-** The acceptable makes of various equipments/ components / accessories have been indicated in the List of Acceptable Makes / Manufacturers. The tenderer shall work out the cost of the offer on this basis. Alternate makes are not acceptable and tenders with any other make (s) shall be rejected.

3. The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturer's for all items of equipments regarding installation, adjustments, operation and maintenance including preventive maintenance & trouble shooting together with all the relevant data sheets, spare parts catalogue etc. all in triplicate.

4. 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 the ir tendered cost-whether specifically indicated in the schedule of work or not: -

(i) Foundations for equipments including vibration isolation springs/ pads,

(ii) Making good all damages caused to the structure during installation and restoring the same to their original finish.

(iii) Minor building works necessary for installation of equipments, foundation trench for fuel line & cable, making of opening in walls or in floors and restoring them to their original condition/ finish and necessary grouting etc. as required.

(iv) All supports for exhaust & water pipes, chimney, bus trunking (if included in scope of contract), cables, anti-vibration pads etc. as are necessary.

(v) All electrical work and neutral earthing, body earthing, required for engine& alternator, main board/ control panels, and control wiring including loop earthing, if specified in Schedule of Work.

(vi) All pipes, bus trunking and/ or cable connections.

(vii) POL i.e. HSD oil and lub. oil for diesel engine for testing & commissioning for12 hours i/c 1hr of 10% overloading at OEA/ OEM works shall be arranged by the contractor. POL i.e. HSD oil and lub. oil for trial run of 4 Hrs. at site at available load shall be arranged by the department.

(viii) Painting of all exposed metal surfaces of equipments and components with appropriate colour.

C=
I= } NIL AE (P)(E)
O

(ix) Clearance/ Approval of the complete installation from CPCB/ State Pollution Control Board, Central Electricity Authority (CEA)/ Local Bodies and other licensing authorities, wherever required.

5. **Technical specifications for DG set work:-**

(i) The tenderer shall submit the de-rating calculations for engine along with supporting manufacture catalogues & model no of Engine & Alternator, offered.

(ii) CPCB Norms- The DG Sets shall be meet the requirements of environmental (protection) rules 1986 as laid down by Ministry of Environment & Forests read with GSR 771 (E) dtd. 11-12-13 with respect to emission norms of the diesel engine for supplies made on or after 01-07-14 and with respect to noise level GSR 371 (E) dated 17/05/2002 for the DG sets supplies made on or after 01-01-05. The firm need to furnish the certificate of Type approval and certificate of conformity of production issued by the Central Pollution Control Board (CPCB) or any authorised agency as prescribed by MoEF / CPCB in the above law.

(iii) **Terms &condition required at the time of MOU:-**

(a) Written commitment from OEM/OEA to supply the DG Sets and delivery schedule as per requirement of department.

(b) Certificate from OEM/OEA or authorized service provider of engine manufacturer for satisfactory installation and commissioning of DG Set after completion of the work.

(c) Required Guarantee of DG Set from OEM/OEA in favor of Engineer-in-Charge to cover defect liabilities.

(d) An undertaking that mandatory free service is carried out during the guarantee period by the authorized service provider of engine manufacturer.

6. INSPECTION AND TESTING

The successful tenderer will arrange staff/fuel/POL for test run at his cost

Inspection and Testing of DG sets of capacity more than 100 KVA

For DG sets of capacity more than 100 KVA, testing shall necessarily be carried out at factory/ manufacturer premises in presence of representative of the Department.

For testing, following procedure will be followed: All major items/ equipments i.e. engine & alternator in assembled condition, associated electrical control panels etc. shall be offered for inspection and testing at factory/ manufacturers works. The successful tenderer shall give a notice of minimum two weeks for carrying out such tests. The Engineer-in-charge/ or his authorized representative shall witness such inspection & testing at mutually agreed date. The cost of the representative's visit to the factory will be borne by the Department.

The department also reserves the right to inspect the fabrication job at factory and the successful tenderer has to make arrangements for the same.

DG set will be tested on load of unity power factor for the rated KW rating. During testing, each of the D.G. sets covered under scope of work, shall be operated for a

period of 12 hours on the rated KW at DG set's KW rating including one hour on 10% overload after continuous run of the 12 Hours. During testing all controls/operations safeties will be checked and proper record will be maintained. Any defect/abnormality noticed during testing shall be rectified. The testing will be declared successful only when no abnormality/ failure is noticed during the testing. The DG set will be cleared for dispatch to site only when the testing is declared successful by authorized representative/ Engineer-in-Charge.

7. Inspection and Testing of DG sets of capacity equal to or less than 100 KVA

For DG sets of capacity equal to or less than 100 KVA, testing shall necessarily be carried out at site. However, initial inspection can be done at factory/manufacturer works before dispatch at site of work at the discretion of Engineer-in-Charge. All major items/ equipment i.e. engine & alternator in assembled condition, Electrical control panel etc. shall be offered for initial inspection at factory/ manufacturers works. The cost of the Engineer's visit to the factory will be borne by the Department. After initial inspection, DG Set and associated Electrical panel equipments shall be cleared for dispatch at site.

Copies of all documents of routine and type test certificates of the equipment, carried out at the manufacturers premises shall be furnished to the Engineer-in-charge and consignee.

After completion of the installation work in all respects, the contractor shall offer the DG Sets for testing. Testing shall be carried out exactly as mentioned above in "Inspection and Testing of DG sets of capacity more than 100 KVA para 4".

The requirement of testing of DG Set at manufacturer's premises, in presence of representative of the Department, can be dispensed with/ waived off, keeping in view the exigency of works, with the prior approval of the Chief Engineer. However, test certificates of the particular DG Set on full load, as mentioned in para 4 above, shall be submitted at the time of delivery of DG Set at site.

8. Trial Run/ Running-in-Period

After successful testing of the DG Set, a trial run at available load will be carried out for 120 Hours or 15 Days whichever is earlier. The DG Set will be operated and a log of all relevant parameters will be maintained during this period. The arrangement of staff for trial run/ running in period will be made by the successful tenderer. However, diesel shall be provided by Department. The contractor will be free to carry out necessary adjustments. The DG Set will be said to have successfully completed the trial run, if no break-down or abnormal/ unsatisfactory operation of any component of the entire installation included in the scope of work of the contract, occurs during this period. After this the DG Set will be made available for beneficial use. After the DG Set has operated without any major break-down/ trouble, it shall be taken over by the department subject to guarantee clause of the contract. This date of taking over of the DG Set, after trouble free operation during the trial run/ running-in period, shall be the date of acceptance/ taking over.

9. Safety measures

C=
I= } NIL AE (P)(E)
O

All equipments shall incorporate suitable safety provisions to ensure safety of the operating personnel as per manufacturers' standard practice.

10. STATUTORY CLEARANCE(S)

Approval/ clearance of the complete installation shall be obtained by the contractor from CPCB/ State Pollution Control Boards/ Local Bodies/ Central Electricity Authority (CEA)/ other licensing authorities wherever required. However, application shall be made by Department and any statutory fee, as applicable, shall be paid by Department directly to the govt. authorities concerned.

11. Drawings for Approval on Award of the work

The contractor shall prepare & submit three sets of following drawings and get them approved from the Engineer-in-charge before the start of the work. The approval of drawings however does not absolve the contractor not to supply the equipments/materials as per agreement, if there is any contradiction between the approved drawings and agreement.

(a) Lay out drawings of the equipments to be installed including control cables, fuel/ lube oil pipes and supports/ structure for exhaust piping, Chimney and bus ducts/ cable trays.

(b) Drawings including section, showing the details of erection of entire equipments.

(c) Electrical wiring diagrams from engine-alternator set to Electrical control panel, Electrical control panel to essential LT board including the sizes and capacities of the various electrical/ control cables and equipment.

(d) Dimensioned drawings of Acoustic enclosure/ Engine-Alternator set and Electrical control panel.

(e) Drawings showing details of supports for pipes, chimney cable trays, ducts etc.

(f) Any other drawings relevant to the work.

12. Drawings/Documents to be furnished on completion of Installation

Two sets of the following laminated drawings shall be submitted by the contractor while handing over the installation to the Department. One set shall be laminated on a hard base for display in the DG set room/room where AMF panel is installed and another set shall be displayed in Junior Engineer's room. In addition, drawings will be given on Compact Disc (CD):

(a) DG set installation drawings giving complete details of all the equipments, including their foundations.

(b) Line diagram and layout of all electrical control/AMF panels giving switchgear ratings and their disposition, cable feeder sizes and their layout.

(c) Control wiring drawings with all control components and sequence of operations to explain the operation of control circuits in AMF panel/PCC.

(i) Manufacturer's technical catalogues of all equipments and accessories.

(ii) Operation and maintenance manual of all major equipments, detailing all adjustments, operation and maintenance procedure.

C=
I= } NIL AE (P)(E)
O

13. AFTER SALES SERVICES

The contractor shall ensure adequate and prompt after sales service free of cost during guarantee period, and against payment after the guarantee period is over, in the form of maintenance, spares and personnel as and when required during normal life span of the equipments and shall minimize the breakdown period. In case of equipment supplied by other manufacturers the firm shall furnish a guarantee from the manufacturer for the same before the DG Set installation is taken over.

C=
I= } NIL AE (P)(E)
O

ADDITIONAL CONDITIONS FOR SUB-STATION.

1. **All the Additional Terms and Condition as mentioned under "Additional Terms and Conditions for E&M works" shall be treated as part and parcel of these Additional Conditions.**

2. **Specification**-: The work shall be executed as per CPWD's general specification for Electrical Works, Part-I-2023, Part-II-2023 (External) & Part-IV-2013 for Sub-Station. Indian Standards amended up to date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations; specifications given along with the tender shall apply.

3. **Location**-: The contractor is advised to visit the site before submission of their tender and ensure that equipment being offered by them shall be accommodated in the spaces available.

4. **Terms of Payments:**

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

(i) No advance payment shall be made.

(ii) 60% after initial inspection at works and delivery at site in good condition on pro-rata basis.

(iii) 20% after completion of installation in all respect.

(iv) Balance 20% will be paid after Testing, Commissioning & Handing Over to the department for beneficial use.

4- **Rates**-:

4.1 The department will not issue Octroi exemption certificate.

5- **Completion Period** -:
The Completion period indicated in the tender documents is for the entire work of planning, designing, approval of drawings etc., arrangement of materials & equipment's, delivery at site including transportation, installation, testing, commissioning and handing over of the entire system to the satisfaction of the Engineer-in-charge.

6- **Power & Water Supply:-** Responsibility for supply of power & water for execution of work shall be of contractor.

7- **Indemnity** -:
The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the contractor shall be responsible for any

C=
I= } NIL AE (P)(E)
O

accident or damage incurred or claims arising three from during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

8. **Inspection by CEA**-: After completion of the work, the contractor will offer the same for inspection of Central Electricity Authority. The contractor will extend all help including test facilities to the representative of Central Electricity Authority. In case the contractor fails to make desired facilities available during inspection, the department reserves the right to provide the same at the risk & cost of the contractor. The observation of Central Electricity Authority which are a part of agreement will be attended by the contractor promptly. The installation will be commissioned only after receiving clearance from Central Electricity Authority. Inspection fees of Central Electricity Authority will be borne by the department.

9. Losses of the transformers shall be in accordance with CPWD General Specifications for Electrical Works, Part-IV, Sub-station-2013, relevant test certificate has to be produced by agency.

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

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

12. Agency has to provide all related diagram and calculation sheet for protection system.

13. Agency has to provide minimum one-year guarantee in written from date of completion, on all equipment supplied and installed by him.

C=
I= } NIL AE (P)(E)
O

Additional Conditions for Lift work.

1. **All the Additional Terms and Condition as mentioned under "Additional Terms and Conditions for E&M works" shall be treated as part and parcel of these Additional Conditions.**

2- General

i. **Specification**:- The work shall be executed as per CPWD's general specification for Electrical Works part-I (Internal)-2023, Part-II (External)-2023, Part-V (Fire Fighting system)-2020, Part-VI(Fire alarm System)-2018 & Part-III (lift-2003), IE Rules, Indian Standards amended upto date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations; specifications given along with the tender shall apply.

ii. These additional specification are to be read in conjunction with above and in case of variations, specifications given in these additional conditions shall apply. However, nothing extra shall be paid on account of these additional specifications & conditions as the same are to be read along with schedule of quantities for the work.

iii. The tenderer should in his own interest visit the site and familiarize himself with the site conditions before e-tendering

iv. No T & P shall be issued by the department and nothing extra shall be paid on account of this.

v. The contractors have provident fund code number and all the workers employed by them has activated Universal Account Number (UAN).

vi. Payment to contractor shall be made after obtaining the certificate from the contractor that all the workers employed by him directly or indirectly are enrolled as member of PF and due contribution have been made into their account.

vii. **The supplementary agreement for comprehensive maintenance shall be drawn between Deptt. and the contractor after satisfactory installation, testing and commissioning of lifts and handing over the same to the client, as per the prescribed from of Supplementary Agreement enclosed herewith. The scope of work is defined elsewhere in this NIT.**

3. Rates

The rates quoted by the tenderer/firm shall be inclusive of GST and all charges for packing forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site i/c temporary constructional storage, risks, over head charges general liabilities/obligations and clearance form local authorities.

The contractor has to carry routine & preventive maintenance for 12 months from the date of handing over. Nothing extra shall be paid for this.

Octroi duty shall not be paid separately but octroi exemption certificate can be furnished by the department on demand. However, the department is not liable to re-imburse the octroi duty in case exemption certificate are not honoured by the concerned authorities.

The rates quoted by the firm should be inclusive of all related minor civil works and nothing extra shall be paid on this account.

C=
I= } NIL AE (P)(E)
O

4. Completeness of tender

All sundry equipment, fittings, unit assemblies, accessories, hardware items foundation bolts, termination lugs for electrical connections, and other items which are useful and necessary for efficient assembly and installation of equipment and components of the work shall be deemed to have been included in the tender irrespective of the fact whether such items are specifically mentioned in the tender documents or not.

5. For item/equipment requiring initial inspection at manufacturer's works the contractor will intimate the date of testing of equipments at the manufacturer's works before dispatch. The department also reserves the right to inspect the fabrication job at factory and the successful tenderer has to make the arrangement for the same. The successful tenderer shall give sufficient advance notice regarding the dates proposed for such tests /inspection to the department's representative (S) to facilitate his presence during testing/fabrication. The Engineer-in-charge at his discretion may witness such testing/fabrication. The cost of the Engineer's visit to the factory will be borne by the Agency. Also equipment may be inspected at the manufacturer's premises before dispatch to the site by the contractor.

6. Storage and custody of materials

The lift machine room maybe used for storage of sundry materials and erection equipments if available or else the agency has to make hisown arrangement. No separate storage accommodation shall be provided by the department. Watch and ward of the stores and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the department.

7. Care of building

Care shall be taken by the contractor while handling and installation the various equipments and components of the work to avoid damage to the building. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of the installation from the site of work.

8. Guarantee

All equipments shall be guaranteed for a period of 12 month from the date of taking over the installation by the department against unsatisfactory performance and /or break down due to defective design, workmanship of 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 faulty the department that undue delay in being caused by the contractor in doing this, the same will be 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.

11. After award of work

The successful tenderer would be required to submit the following drawing within 15 days of award of work for approval before commencement of installation.

a) All general arrangement drawings.

C=
I= } NIL AE (P)(E)
O

b) Details of foundations for the equipments, load data, location etc. of various assembled equipment as may be needed generally by other agencies for purpose of their work. The data will include breaking load on guides, reaction of buffers on lift pits reaction on support points in machine room, lift well etc.

c) Any other drawing /information not specifically mentioned above but deemed to be necessary for the job by the contractor.

d) Any other drawing/information not specifically mentioned above but deemed to be necessary for the job by the contractor.

12. The successful tenderer should furnish well in advance three copies of detailed instruction and manual of manufacturer for all items of equipments regarding installation, adjustment, operation and maintenance i/c preventive maintenance & trouble shooting together with all the relevant data sheets, spare parts catalogue and workshop procedure for repairs, assembly and adjustment etc all in triplicate.

13. Extent of work

13.1 The work shall comprise of entire labour i/c supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning as may be required by the department. The term complete installation shall not only mean major items of the plant and equipments covered by specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender document in connection with this contract.

13.2 Minor building work necessary for installation of equipment, foundation, making of opening in wall or in floors and restoring to their condition, finish and necessary grouting etc as required.

13.3 The work is turnkey project. Any item required for completion of the project but left inadvertently shall be executed with in the quoted rates.

14. Inspection and testing

14.1 Copies of all documents of routine and type test certificated of the equipment, carried out at the manufacturers premises shall be furnished to the engineer –in – charge and consignee. The agency shall intimate in writing to Engineer-in-charge for factory inspection well in advance before dispatch.

14.2 After completion of the work in all respect the contractor shall offer the installation for testing and operation.

14.3 Dummy load for testing of lift after installation at site shall be arranged by the contract. Nothing extra shall be payable on this account.

15. Compliance with Regulations and Indian standards

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

C=
I= } NIL AE (P)(E)
O

I. Factories Act.

II. Indian Electricity Rules

III. I.S & BS Standards as applicable

IV. Workmen's compensation Act

V. Statutory norms prescribed by local bodies like CEA, DFO, NDMC etc.

15.2 Nothing in this specification shall be construed to relieve the successful tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.

15.3 Successful tenderer shall arrange for compliance with statutory provision of safety regulation and departmental requirements of safety codes in respect of labour employed on the work by the tenderer. Failure to provide such safety requirement would make the tenderer liable for penalty of Rs. 50/- for each default. In addition, the department will be at liberty to make arrangement for the safety requirements at the cost of tenderer and recover the cost thereof from him.

17. Erection tools

No tools and tackles either for unloading or for shifting the equipments for erection purpose would be made available by the department. The successful tenderer shall make his own arrangement for all these facilities.

18. Co-operation with other agencies

The successful tenderer shall co-ordinate with other contractors and agencies engaged in the construction of building, if any, and exchange freely all technical information so as to make the execution of this works contract smooth. No remuneration should be claimed from the department for such technical cooperation. If any unreasonable hindrance is caused to other agencies and any completed portion of the work has to be dismantled and re-done for want of cooperation and coordination by the successful tenderer during the course of work, such expenditure incurred will be recovered from the successful tenderer if the restoration work to the original condition or specification of the dismantled portion of the was not undertaken by the successful tenderer himself.

19. Mobilization advance

No. mobilization advance shall be paid for this work.

21. Verification of correctness of Equipment at destination

The contractor shall have to produce all the relevant record to certify that the genuine equipment from the manufacturers has been supplied and erected. GST invoices/challans/e way bills are to be submitted to the department for confirming of genuineness of materials.

22. Painting

This shall include cost of painting of entire exposed iron work complete in the installation. All equipments works shall be painted at the works before dispatch to the site.

23. Training

The scope of works includes on technical training of two persons at site. Nothing extra shall be payment on this account.

24. Maintenance

C=
I= } NIL AE (P)(E)
O

24.1 Sufficient trained and experienced staff shall be made available to meet any exigency of work during the guarantee period of one year from the date of completion or handling over of the installation to the deptt. whichever is later.

24.2 The routine as well as preventive maintenance for one year by manufacturer shall be carried out from the date of taking over the installation by deptt. i/c attending all call back of break down round the clock, for one year which shall be within the scope of work.

25. Interpreting specifications

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

a) Schedule of quantities

b) Technical Specifications

c) Drawing (if any)

d) General Specifications

e) Relevant IS or other international code in case IS code is not available.

26. Technical specification for Lift

i) Door safety: Temper proof Infra Red curtain covering the entire height of Lift door will be provided in the lifts.

ii) Audio/Visual overload alarm with load plate indicating the rated load and permissible number of passengers/load will be provided in the lifts.

iii) Intercom system will be provided at suitable locations.

iv) BARRIER FREE REQUIREMENTS

a) All the 13 Passenger and above lifts shall be made suitable for wheel chair users with suitable dimensions.

b) A hand rail not less than 600mm long at 900mm above floor level shall be fixed adjacent to the control panel to 3 sides of car body.

c) The time of an automatic closing door should be minimum 5 seconds and the closing speed should not exceed 0.25 mtrs. per second.

d) The interior of the lift shall be provided with a device that audibly indicate the floor the cage has reached and indicate that the door of the cage for entrance/exit is either open or closed.

e) Brail operating buttons as required in car an all levels.

v) All the required test certificate and safety certificates has to be submitted by agency.

vi) If any discrepancies in Schedule of Work and detailed specification than detailed specification will be valid.

27. Technical requirement for Lift.

S. No.		
1	Name of Manufacturer	
2	Country of Manufacturer	
3	Capacities (Persons/Weight)	13 Passengers (884 Kg.)
4	Service	Passenger lift

C=
I= } NIL
O

AE (P)(E)

5	Speed of Travel	1.0 mps
6	Height of Travel	12 mtr. (approx)
7	Nos. of floors served	G+3
8	Nos. of openings	4 Nos.
9	Position of counter weight	As per OEM standard.
B.	**Machine**	
1	Position of Machine	MRL type
2	Motor	Gear less type.
3	Electric supply particulars for which it is suitable for operation	415 volt 3 phase 50 Hz. 4 wire system
C.	**Brake**	
1	Type	Electro mechanical
D.	**Car and Doors:**	
1	Outside dimension of car	Suitable for 13 passenger lift as per IS
2	Inside clear dimensions	Suitable for 13 passenger lift as per IS
3	Construction of car	Stainless Steel (SS 304))
4	Design/type of enclosure of car	Moon rock/Hairline finish Stainless Steel. (SS 304)
5	Details of flooring	Granite flooring
6	Attachment & fitting inside the car	As per OEM
a)	Car Size:	Suitable for 13 passenger lift as per IS
b)	Operation:	Central opening
c)	Construction, design & finish:	Moon rock/Hairline finish Stainless Steel.
7	Landing doors	Stainless Steel. (SS 304)
a)	Door clear opening	Minimum 900mm
b)	Operation:	Centre opening power doors
c)	Construction & Finish:	Moon rock/Hairline finish Stainless Steel
E.	**Safety Devices:**	
1	Car safety - Type	Over speed governor
2	Counter weight safety - Type	Spring buffer
3	Door interlocks in car - Type	Electro mechanical
4	Door locks in landing - Type	Electro mechanical
5	Direction and position indicator in car	Dot matrix (Red LED)
6	Emergency alarm	Battery operated high intensity DB level
7	Facia plate	Stainless Steel
8	2 Phase fireman drive	Yes required
9	Hands free press & speak intercom	Yes required
10	Full height infra red safety curtains	Yes required
11	Pit Ladder	Yes required
12	Signal fixtures in stainless steel finish	Yes required
13	Emergency light with rechargeable battery	Yes required
14	Adjustable guide shoes	Yes required
15	Micro movement LED based buttons	Yes required
16	+10% to -10% volt fluct. Withstand capacity	Yes required
17	Automatic phase reversal	Yes required
F.	**Other safeties included in the offer**	**ARD suitable for 13 passenger lift as per IS specification**

28. Additional conditions for comprehensive maintenance of Lift

(i) The Agency has to maintain the lift in perfect and safe operate condition and to the entire satisfaction of Engineer – in – charge during 4 years after defect liability period of 1 year as mentioned.

C=
I= } NIL AE (P)(E)
O

(ii) The Agency should keep the service record of lift for each month and should be got signed by the JE(E)/AE(E) in charge of work.

(iii) In performing the comprehensive maintenance service the agency shall take all reasonable steps to maintain the equipment in proper operating condition and the agency shall trained and appropriately supervised personal to perform the maintenance services.

(iv) The maintenance services shall be conducted during the normal working hours.

(v) The agency during its normal working hours shall send at regular intervals and as frequently as the company thinks necessary having regard to the age, nature and condition of the elevator, (But not less than twelve times per annum) a technician systematically inspect adjust and lubricate the parts of the elevator to the extent necessary to maintain the elevator in satisfactory working order.

(vi) In case of breakdown or failure in the elevator the firm shall send as soon as may responsibly be possible and during firms normal working hours a technician to carry out necessary repairs in order to restore the elevator to satisfactory working condition.

(vii) The Agency will carry out the work according to its standard costmary annual safety test to examine all safety devices.

(viii) In performing the service described the firm will replace (identical or equivalent item) or rectify as its option any complaint of the elevator rendered defective due to normal wear and tear and arising out of ordinary and reasonable use of the elevator except for such terms and condition which are excluded hereunder as particular and general exclusions.

(ix) The parts which are replaced/dismantled shall become firm's property.

(x) The lift under contract will not be operated while the actual repair process is being carried out. No one will be allowed to use the equipment during this period.

(xi) All the safety devices should be examined periodically and rectified immediately if the same are found defective which includes ARD and its batteries etc.

(xii) Proportionate recovery will be made for the months for which monthly service is not carried out.

(xiii) The Agency shall keep sufficient stock of spares required for comprehensive maintenance of the lifts for the entire period of maintenance. The agency shall also maintain all the spare parts including the spares supplied by their vendors for the lift for the entire life period of the lifts i.e., 20 years from the date of successful handing over. No claim for upgradation or replacement of lifts due to non-availability of spares/ obsoleteness of the model shall be entertained during the life time period mentioned above and nothing extra shall be paid or reimbursed on account of upgradation/ obsoleteness of spares during the life time period.

(xi) **Scope of the contract:**

C=
I= } NIL AE (P)(E)
O

All parts and components fitted by lift manufacturer will be original parts and all are covered under this comprehensive contract. Agency has to replace defective parts/component by OEM parts only or components if original parts or components are not available the parts or components fitted will be of equal quality and functionality free of cost. The firm's has to provide warranty/guarantee on replaced part for minimum 1 year and if defects occur again and again any number of time, agency has to replace defective part with new part.

Lift should not come break down more than 12 hours in any circumstances, otherwise a recovery of amount Rs.1000/- per day will be proposed on account of service not provided.

C=
I= } NIL AE (P)(E)
O

Additional Conditions for providing Fire Fighting System.

1. **All the Additional Terms and Condition as mentioned under "Additional Terms and Conditions for E&M works" shall be treated as part and parcel of these Additional Conditions.**

2. **Specification**:- The work shall be executed as per CPWD's general specification for Electrical Works part-I (Internal)-2023, Part-II (External)-2023, Part-IV (Sub-station)-2013, Part-V (Wet Riser System for Fire Fighting Installation)-2020, IE Rules, Indian Standards amended upto date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations; specifications given along with the tender shall apply.

3. **Approval from CFO**:- The Contractor shall be required to obtain NOC from Chief Fire Officer and work shall be deemed to be completed only after receiving NOC from CFO & rectification if any. Statutory fee if any shall be paid by department. However, all liasoning work / arranging inspection of CFO shall be the responsibility of contractor.

4. **Storage**: - Responsibility for storage space for execution of work shall be of main contractor.

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

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

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

8. **No inspection outside the country is permissible if required so the same will be deemed to be waived off**.

C=
I= } NIL AE (P)(E)
O

Additional Terms & Condition of Fire Alarm System

1. **All the Additional Terms and Condition as mentioned under "Additional Terms and Conditions for E&M works" shall be treated as part and parcel of these Additional Conditions.**

2. Specification:- The work shall be executed as per CPWD General Specifications for Electrical Works Part VI Fire Detection and Alarm System – 2018 amended up to date, as per NBC 2016 and as per direction of Engineer-in-charge. The additional specifications are to be read with above and in case of any discrepancy; technical specifications given along with the tender shall apply.

3. Pre-commissioning test:- Before commissioning of the installation, all tests as per CPWD's specifications and or respective manufacturer's recommendations shall be carried out and result submitted.

4. Approval of Drawings: After award of the work, the contractor will have to submit following drawings:- (i) Single Line Diagram of Fire Alarm System. (ii) Drawings of Fire Alarm System. (iii) Any other drawing considered necessary by Engineer-in-Charge. Work will be started after getting the above drawings approved by the Engineer-in-charge.

5. Final inspection:- After completion of the work, the contractor will demonstrate trouble free operation of the system to the Engineer-in-Charge. In case any deficiencies are noticed during the demonstration, the same will be attended by the contractor promptly.

6. Completion Plan/Drawings: After completion of the work the contractor will submit completion plans, wiring drawings of equipment, catalogue etc. which are required for maintenance of the system.

7. **Pre fire NOC:-** Contractor shall take pre fire NOC if required as per statuary provision.

8. **Approval from CFO:-** The Contractor shall be required to obtain NOC from Chief Fire Officer, and work shall be deemed to be completed only after receiving NOC from CFO & rectification if any. Statutory fee if any shall be paid by department. However all liasoning work / arranging inspection of CFO shall be the responsibility of contractor.

C=
I= } NIL AE (P)(E)
O

PREFERRED MAKES OF MATERIALS FOR E & M

Sl.	Details of Materials/ Equipment	Manufacturer's Name
	I.E.I, MCBDB & MCB, Cables and Wires	
1	MCB, Isolator, Industrial plug Socket, RCCB, RCBO's (ISI Marked/IEC Compliant)	Schneider Electric ACTI-9(N)/ Legrand (DX3)/ LK (Formerly L&T) (Exora)/ ABB (SB200M)/Seimens (Betaguard)/Havells
2	MCBDB & Loose Wire Box	Schneider Electric (Acti-9)/ LK(Exora)/Siemens/ ABB (Elegance)/ Legrand (Ekinox)
3	Change Over Switch	LK/ Havells/ Hager/ C&S/ Schneider
4	Automatic Transfer Switch (ATS)	Hager/ABB/ LK/Schneider/Siemens
5	FRLS PVC insulated copper conductor single core cable for wiring. (ISI marked)	RR Kabel/ Havells/ Polycab/ KEI/Grandlay
6	Armoured/Unarmoured Telephone cable, Coaxial Cable	Delton/ Finolex/ RR Kabel/ Havells/ Grandlay
7	MS Conduit (ISI marked) with heavy duty MS conduit pipe accessories	BEC/NIC/AKG/RMCON/JPC (Note: The make of accessories shall be same that of conduit pipe and will comply to IS/4768 part 2 2003)
8	PVC conduit (ISI marked) with heavy duty PVC conduit pipe accessories	AKG/ Norpack/BEC/Polypack/Precision/Polycab
9	Modular switches, socket/ telephone socket/ cable TV socket/ data outlet socket/ fan regulator/ GI boxes etc (Wiring accessories)/ regulators/ blacking plate, Motor starter etc.	Legrand / Schneider electric / Honeywell / LK (Formerly L&T)
10	Industrial Socket	L&T/Legrand/Schneider/Havells/ABB
11	Selector Switch & Toggle Switch	Salzer (L&T)/ Siemens/ Kaycee/Rishabh/ABB
12	PVC Trunking	MK/ Schneider Electric/ Legrand/OBO
13	GI Pipe	Tata/ Jindal (Hissar)/ Prakash Surya
14	Paints	Nerolac/ Asian/ Berger
15	Terminal Blocks & Connectors	Elmax/Wago/Hensel/Connectwell
16	Phenolic Laminated Sheet/ Bakelite sheet	Hylam/ Formica (P-I Grade)/ Mylam/Greenlam
17	Cat-6 Cable, Co-Axial cables, Telephone Wires & cable	Beldon/ Legrand/ Molex/ Schneider/ Comscope
	Fans & Fittings	
1	LED Fittings (ISI Marked/BEE Certified)	Wipro/ Phillips/ Havells/Lighting Technology/Crompton
2	Exhaust fan/Fresh Air Fan	Havells/Crompton greaves/USHA/ Bajaj
3	Ceiling Fan ISI Marked/BEE	Havells/ Crompton Greaves/ USHA/Bajaj

C=
I= } NIL

O

AE (P)(E)

	Certified)/Wall Fan	
4	Wall Bracket Fitting	Havells/ Decon / Phillips/Lighting Technology/ Luster/ Jaquar/ Crompton
5	Geysers (BEE Certified)	Racold/CG/Havells//AO Smith
	Street Lighting	
1	LED post Top fitting	Wipro/ Phillips/ Havells/ Lighting Technology/ Crompton
2	LED Street light fitting	Wipro/ Phillips/ Havells/ Lighting Technology/ Crompton
3	LED street lights with inbuilt Solar panel and controller	Wipro/ Phillips/ Havells/ Lighting Technology/ Crompton
4	Ornamental MS & G.I pole (factory finish)	Keselec Schreder- Ecopole3m ATG in GI with base plate/ Valmont / Wipro/ Phillips/ Crompton greaves/ Bajaj/Paruthi Engineers Pvt. Ltd./ Luster/Twinkle
5	Hot Dipped Galvanized Octagonal Pole (Factory finish)	Valmont/ Wipro/ Phillips/Crompton Greaves/ Paruthi Engineers Pvt. Ltd.
6	Polycarbonate Junction Box/ Enclosure	Hensel/ Spelsberg/ Naptune-Bals/OBO
7	XLPE Insulated PVC Sheathed Alum./ Copper Conductor Armored Cable of 1.1KV Grade	RR Kabel/KEI/Havells/Polycab/Grandlay
	Sub Station Equipments	
1	LT panel/ Meter Panel Board/ Outdoor Feeder Pillar/APFC panels / Bus ducts	Tricolite Electrical Industries/ C&S/ Sterling & Wilson/ MILESTONE/ Adlec Control System Pvt. Ltd./ Advance Panels & Switchgears Pvt. Ltd./ Associated Switchgears & Projects Ltd/ R P Control/Excel Control System/Asian Switchgear Pvt. Ltd./Precision System Control
2	SMDB	Schneider Electric ACTI-9(N)/Legrand/LK(FORMERLY L&T)(ENERSYS-S)/ABB(Elegance)/Siemens
3	Air insulated Rising Main/ Bus Trunking & accessories	C&S/ L&T/Schneider/Legrand/ABB/Siemens
4	Sandwich type bus Trunking/ Rising Main & accessories	C&S/ L&T/Schneider/Legrand/ ABB/Siemens
5	Moulded Case Circuit Breaker (MCCB) Thermal Release/ Microprocessor Based (Ics=Icu=100%)	Schneider electric NSX series/ Legrand (DPX3)/ L&T(D- Sine)/ABB(T-Max)/Siemens(VL series)
6	Power/ Aux. Contactor 3/4 Pole	Schneider Electric/ Legrand/Hager/L&T/ ABB/ Siemens /C&S
7	Potential transformers/ Current Transformers	Automatic Electric/ Gilbert & Maxwell/ Matrix/ Precise/ L&T/ Kappa
8	LED Type Indicating Lamps/ Push button	Schneider electric /L&T / Siemens/C&S/Vaishno/ABB
9	Over load relays	Schneider Electric/ L&T/ Siemens/C&S/ABB

C=
I= } NIL
O

AE (P)(E)

10	Conventional/Electronic Digital Meters (A/V/PF/Hz/KW/KWH)	Conzerv/ L&T/ Secure/ AE/ C&S
11	Timer	Schneider Electric/ Legrand / Hager / L&T/ABB/Siemens/C&S
12	Fasteners/ GI Clamps	Hilti/ Fisher/ Chilli / GMGR
13	D.W. Corrugated HDPE Pipe (ISI Marked)	REX/ Duraplast/ Duraline
14	Transformer (Oil/ Dry pipe)	Crompton/ ABB/ Schneider/VOLTAMP/Servokon/Kirloskar/ Indian Transformers and Electricals
15	HT Panel/ Ring main Unit	Compton/ Siemens/ ABB/ L&T/ Schneider
16	H.T. Cable (ISI marked)	RR Kabel/KEI/Havells/Polycab
17	HT End Termination/Cable Jointing Kit	Reychem/ Denson/ Cab Seal/safekei/3M
18	ACBs with Display	Schneider Elecric(Masterpact)/Legrand(DMX3MP4)/L&T (U-Power-OMEGA)/ABB(Emax)PR122/Seimens
19	Rubber mat	Jyoti/ Deep Jyoti/ Premier (Duly ISI Marked)
20	Ammeter	Rishab/ L&T/AE/C&S
21	Voltmeter	Rishabh/ L&T/AE/C&S
22	Capacitor and Reactors /APFC Relay	EPCOS/ L&T/ DUCATI/ ABB/ Siemens/ Schneider
23	XLPE Insulated PVC Sheathed Alum./ Copper Conductor Armored/ Unarmored Cable of 1.1KV Grade	RR kabel/KEI/ Havells/Polyacb/ Grandlay
24	Cable Glands Double Compression With Earthing Links	Baliga Lighting/ Comet/ Cosmos/ Dowells/Gripwell
25	Bimetallic Cable Lug	Comet/ Dowells (Biller India)/ Hex Brass (Copper Alloy India) / Jainson/ Action
26	MS/ GI Cable Tray	Pilco/slotco/pasco/MEM/ BEC/ steelways/ Legrand/ RMcon/True leader/R.P. Controls/OBO
27	Programmable Logic Controller (PLC)	Siemens/ Allen Bradley/ L&T/ ABB/Schneider
	DG Set	
1	Diesel Operated Generating Engine	Cummins India/ Caterpillar/ KOEL/ Volvo Penta/Perkins/ Greaves Cotton Limited
2	Alternator	Stamford/ leroy somer/ kirloskar electric/ caterpillar/ Crompton
3	DG Set Canopy/ Enclosure & AMF Panel	As per OEM/OEA of respective DG set manufacturer
4	Alarm Annunciator	Advani Oralikon/ L&T/ Minilec
	Fire Fighting Equipments	

C=
I= } NIL
O

AE (P)(E)

1	MS pipe	Tata/ Jindal (Hisar)/Sail
2	GI Pipe	Tata/ Jindal (Hisar)/Sail
3	Forged Steel Fittings/flanges	Johnsons Industries/ VS Forge/ JK Forging/ True forge
4	Forged Steel Fittings and flanges (for welding joints)	VS Forge/Rohini/kanwal forge/Johnson/ True forge
5	Pipe hangers	Chilli/Hilti/GMGR
6	Gun metal/ Brass Valve (ISI marked) /(Full way Globe valve/Non return valve)	Sant/ Leader/ Advance/ Zoloto/ Kirloskar
7	Butterfly/Sluice (ISI marked)	Audco/ Sant/ Leader/ Advance/ Zoloto/ Kirloskar
8	Check Value (ISI marked)	Audco/ Sant/ Leader/ Advance/ Zoloto/ Kirloskar
9	Foot Valve (Cast Iron / Gun Metal)	Audco/ Sant/ Leader/ Advance/ Zoloto/ Kirloskar
10	Y- Type Strainer	Audco/ Sant/ Leader/ Zoloto/ Kirloskar
11	Fire/ Sprinkler Pump/ Terrace Fire Pump	Kirloskar/KSB/ Grundfos/ Wilo Mather & Platt
12	Electrical Motor	ABB/ Siemens/ Kirloskar/ Grundfos/ Crompton/ NGEF
13	Diesel Engine for fire pump	Cummins India/Ashok Leyland/ KOEL/ Greaves
14	Couplings (Type-Type)	Lovejoy/ Fenner/ Dunlop
15	Anti Vibration Mounting	Kanwal Industrial Corporation/ Dunlop/ GERB/ Resistoflex
16	Pressure Switch (ISI marked)	System Sensor/Indfoss/Danfoss/Switzer/Honeywell Siemens
17	Pressure Guage (ISI marked)	H Guru/ Fiebig/ Dwyer
18	Double/Single Headed Landing Value (ISI marked)	Minimax/ New Age/ Safeguard/ Lifeguard/ Padmini
19	Male Female Fire Hose Coupling (SS 304) (ISI marked)	Minimax/ New Age/ Safeguard/ Lifeguard/ Padmini
20	First Aid Hose Drum/ Fire Hose reels/ Shut off Nozzle (Gunmetal/ ABS) (ISI marked)	Minimax/ New Age/ Safeguard/ Lifeguard / Padmini
21	SS 304/ Gun metal Branch Pipe & Nozzle (ISI marked)	Minimax/ New Age/ Safeguard/ Lifeguard/ Padmini
22	Fireman Axe	Minimax/ New Age/ Safeguard
23	Water Flow Switch (FM/UL listed)	System Sensor/ Rapid Control/ Potter/ Switzer
24	Rust preventive polymeric 4mm thick tape for pipes directly buried in ground pipe protection pypkoat (AW4) wrapping (ISI marked)	Pypcoat/Marphalt/Rustech/Safex
25	Level controller & indicator (water) (ISI marked)	Auto Pump/ Cirrus Engineering/ Techtrol
26	Fire brigade inlet connection (ISI marked)	Minimax/ New Age / Safeguard / Lifeguard/Padmini/ Eversafe/Suprex
27	Thermoplastic pipe for first aid	New Age / Safeguard/ Lifeguard/Padmini/

C=
I= } NIL
O

AE (P)(E)

	hose reel (ISI marked)	Eversafe/Suprex
28	Fire Sealent	Promat/ Birla 3M/ Hilti
29	Overload relays	Schneider electric / Larsen & Toubro/ Siemens/ C&S / ABB
30	Power/ Aux. Contractor 3 /4 pole	Schneider electric / Legrand/ LK(FORMERLY L&T)/ABB/ Seimens/ BCH
31	LED Type Indicating lamps/ Push Button	Schneider electric / LK(FORMERLY L&T)/Siemens/C&S/ABB
32	LT jointing Kit/Termination	Raychem/ denson/ cap seal/ Safekei/ 3M
33	RRL hose pipe (ISI Marked)	New Age/Safeguard/Lifeguard/Padmini
34	Dry Battery	Exide/ Amar raja/ HBL/ Pulse/Amco
35	Battery Charger	Statcon/Amar raja/CDC/AE/Expofyn/Thycon India
36	Epoxy Paint	ICI/ Asian/Berger/ Nerolac
37	Air release Valve	Rb/ Tbs/Cimbrio/Zoloto
38	Analogue/digital Measuring Instruments (Voltmeter/Ammeter/ Energy Meter/KW/PF/Multi Function Meter)	AE/Rishabh/LK(FORMERLY L&T)/C&S/Conzerve
39	Aluminium/Copper power Cable/ Control cable (Armoured/ Unarmoured)	RR Kable/ KEI/Havells/ /Polycab/ Grandlay
40	Cable gland and Lugs	Comet/Dowells/Hex brass(Copper Alloy India)/Jainson/ Action
41	Solenoid Valve/Spray nozzle	Perker / HD / Tyco/Emersion
42	Sprinkler	HD / Tyco/Reliable /Wormald/Viking
43	Sprinkler head/Water Curtain Nozzle	Tyco/Viking/Newage/Lifeguard
44	Steel Flexible Extension	Newage/Tyco /Lifeguard
45	Vibration Eliminator	Resistoflex/D waren/ Kanwal
46	Welding Electrodes	Advani/ESAB/ LK(FORMERLY L&T)
47	Deluge Valve	Tyco/Viking/HD
48	Cast Iron Valve	Kirloskar/Kartar/kalpana/Joloto/Audco/Advance
49	Fire survival cables	Bonton
50	Fire Extinguisher (ISI marked)	Lifeguard/Ceasefire/Minimax/ Kanex
	Fire Alarm System	
1	Manual call box	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
2	Type fault isolator	Johnson Control/Honeywell / Siemen/ Bosch/ EST (Edwards) /ASES
3	Hooter	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
4	Fire alarm control panel	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards) /ASES
5	Repeater panel	Notifier/Johnson

C=
I= } NIL
O

AE (P)(E)

		Control/Honeywell/Siemens/Bosch/ EST (Edwards)
6	Fire detector	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
7	Cat-6 cable, wires & Fiber optic cable	Amp/Avaya/Belden/Legrand/ Molex/ Schneider/Comscope /D-Link
8	Response Indicator	Agni devices/Apollo/System Sensor/ Electro quip/ASES
	Water Supply Pump Sets	
1	Submersible Pump Set	KSB/CG/Kirloskar/Grundfoss/Wilo
2	GI pipe	Tata/Jindal Hisar/Prakash surya
3	Sluice Valve / Check Valve/ Butterfly valve/ Non Return Valve	Kirloskar/Sant/ Leader/ Zoloto/Audco/Advance
4	Submersible Cable	RR Kable/ KEI/ Havells/Polycab/ Grandlay
	EPABX System	
1	EPABX System	Siemens/Cisco/Alcatel/Coral/Panasonic/Avaya
2	Master console phone	Siemens/Cisco/Alcatel/Coral/Panasonic/Avaya
3	Telephone instrument	Betel/ Tata/ Panasonic/Coral
4	18 SWG sheet (Chrone Box)	Topaz/Coral/Crown
5	Constant voltage transformer	Topaz/Bhurji/Delta/ Servokon
6	Unarmoured telephone wire	Delton/ Finolex/RR Kabel/Havells/Grandlay/ Polycab
7	Cat-6 cable, Wires & Fibre optic cable	Amp/Avaya/Belden/Legrand/ Molex/Schneider/Comscope/ D-Link
	Air Conditioner & Water Purifier	
1	Split Air Conditioner	Daikin/ Hitachi/ Carrier/O-General/Toshiba
2	Window type Air Conditioner	Daikin/ Hitachi/ Carrier/O-General/Toshiba
3	Voltage stabilizer	V guard/ Blue bird/ Voltas/Servokon/Logicstate
4	RO/ water purifier	Kent/ Ion Exchange/ Aqua guard
5	Drinking water cooler	Voltas/ Blue Star/ Usha
6	Insulation	Armacell/Supreme/Vidoflex
7	Refrigerator	LG/Haier/Whirlpool/Samsung
8	Deep Freezer Double Door	Blue Star/Rockwell/Voltas/Godrej
	Solar Water Heating System	
1	Solar Water Heating System	Inter solar/ Racold/ Electrotherm/Rashmi/Photon/Polycan
	CCTV System	
1	BULLET CAMERA	CP PLUS/MATRIX/PRAMA / HONEYWELL
2	DOME CAMERA	CP PLUS/MATRIX/PRAMA / HONEYWELL
3	PTZ NETWORK DOME CAMERA	CP PLUS/MATRIX/PRAMA / HONEYWELL

C=
I= } NIL
O

AE (P)(E)

4	NETWORK VIDEO RECORDER	CP PLUS/MATRIX/PRAMA / HONEYWELL
5	HARD DISK DRIVE	SEAGATE/HITACHI/WD
6	LED MONITOR	SAMSUNG/LG/PANASONIC/SONY
7	NETWORK SWITCH	CISCO/D-LINK/JUNIPER/TP-LINK/NETGEAR/HPE(ARUBA)
8	MEDIA CONVERTOR	CISCO/D-LINK/JUNIPER/TP-LINK/NETGEAR/HPE(ARUBA)
9	POWER WIRE/CABLE	POLYCAB/GRANDLAY/FINOLEX/SKYTONE/R R KABEL
10	PVC CONDUIT	AKG/PRECISION/FINOLEX /BEC
11	FIBER CABLE /CAT6 CABLES	AMP/AVAYA/BELDEN/LEGRAND/MOLEX/SCHNEIDER/COMSCOPE
12	HDPE PIPE	REX POLYEXTRUSION/DURA LINE (ISI MARKED)
13	NETWORK RACK	VALRACK/DYNAMIC /RITTAL/COMRACK/NETRACK
14	JUNCTION BOX	SINTEX/SCHINDER/LEGRAND /HENSEL
15	UPS	NUMERIC/EATON/APC/VERTIV/MITSUBISHI/ TOSHIBA
16	SFP FIBER TRANSCEIVER	D-LINK/TP-LINK/NETGEAR
17	WIFI CPE	MIKROTIK/CAMBIUM/REDWIN
18	PATCH PANEL	LEGRAND/BELDEN/COMMSCOP/AMP/SYSTIMAX
19	FIBRE OPTIC DRAWER	LEGRAND/BELDEN/COMMSCOP/PANDUIT/SIEMON/SYSTIMAX
20	FIBRE OPTIC PIGTAIL	LEGRAND/BELDEN/COMMSCOP/PANDUIT/SIEMON/SYSTIMAX
21	FIBRE OPTIC PATCH CARD	LEGRAND/BELDEN/COMMSCOP/PANDUIT/SIEMON/SYSTIMAX
22	OS2 SINGLE MODE LOOSE TUBE	LEGRAND/BELDEN/COMMSCOP/PANDUIT/SIEMON/SYSTIMAX
	Uninterrupted Power supply (UPS)	
1	Online/Offline UPS	Numeric/Eaton/APC/Vertiv/Mitsubshi/Toshiba
	Solar power Generation System	
1	Solar power Generation System	REIL//BEL/CEL/REC/SOLON/VIKRAM/ABB/MOSER BEAR/WIPRO
2	Junction box	VNT/SUN GARNER/OEM of SPV Modules
3	SPV Inverter	Delta/SMA/ABB
4	Module Mounting Structure	As per MNRE/ Manufacture's standard
5	XLPE Aluminium/Copper Cable	Finolex/ RR Kabel / Havells/Grandlay/ Gloster
6	Solar Cable XLPO Insulated (DC)	RR Kabel /Polycab/Havells/Finolex/Lapp/ Grandlay
	Fire Suppression System	

C=
I= } NIL

O

AE (P)(E)

1	Gas Based Fire Suppression System	ASES/3M/Ceasfire
2	EV Charging Station	ABB/Siemens/Legrand/Tata Power/Schneider
	Networking	
1	Network/POE Switch	Cisco / Juniper /HPE-Aruba/Extreme
2	Access Point/Wireless Controller	Hpe-Aruba/Cisco/Juniper
3	Fiber Optic Module	Aruba/Cisco/Juniper
4	Network Rack	Valrack/Dynamic /Rittal/Comrack/Netrack/Legrand
5	Patch Panel	Legrand/Panduit/Systimax/Siemon
6	Cat-6 cable, Wires & Fibre optic cable	Amp/Avaya/Belden/Legrand/ Molex/Schneider/Comscope/ D-Link

Note:- In case make of any equipment or material is not specified in the NIT, the matter shall be referred to the NIT approving authority and obtain the approval. Thereafter the agency can proceed with the supply of material.

C=
I= } NIL AE (P)(E)
O

DETAILED ESTIMATE

Name of Work:- Construction of office (G+1) & Residential Qtrs. (Stilt+3, Type-III, 02 Nos. Type-II, 03 Nos.) with development work for Subsidiary Intelligence Bureau at Jaunpur.

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	Sub Head-I : (Wiring)					
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required.					DSR-2025
1.1	Group- A	174.00	Pts	1,440.00	250,560.00	1.3.1
1.2	Group- C	129.00	Pts	2,101.00	271,029.00	1.3.3
					-	
2	Wiring for twin control light point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface / recessed steel conduit, 2 way modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS/HFFR PVC insulated copper conductor single core cable etc .as required.	9.00	Pts	2,242.00	20,178.00	1.4
					-	
3	Wiring for light/ power plug with 2X4 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit along with 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	600.00	Mtr	480.00	288,000.00	1.5
					-	
4	Wiring for light/ power plug with 4X4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit along with 2 Nos. 4 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable for loop earthing as required.	300.00	Mtr	724.00	217,200.00	1.6
					-	
5	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required.				-	1.7
5.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	450.00	Mtr	370.00	166,500.00	1.7.1
5.2	4 X 1.5 sq. mm + 2 X 1.5 sq. mm earth wire	100.00	Mtr	484.00	48,400.00	1.17.6+1.20.2
5.3	2 X 10 sq. mm + 1 X 6 sq. mm earth wire	120.00	Mtr	778.00	93,360.00	1.7.5
5.4	4 X 6 sq. mm + 2 X 6 sq. mm earth wire	60.00	Mtr	1,001.00	60,060.00	1.7.9
5.5	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	60.00	Mtr	1,253.00	75,180.00	1.7.10
					-	
6	Supplying and drawing following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.				-	1.17
6.1	2 x 1.5 sq. mm	200.00	Mtr	77.00	15,400.00	1.17.2
					-	
7	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	77.00	Nos	757.00	58,289.00	1.56
					-	
8	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	98.00	Nos	659.00	64,582.00	1.32
					-	
9	Supplying and fixing following size/ modules, GI box along with modular base & cover plate for modular switches in recess etc. as required.				-	1.27
9.1	1 or 2 Module (75mmX75mm)	60.00	Nos	354.00	21,240.00	1.27.1
9.2	3 Module (100mmX75mm)	40.00	Nos	384.00	15,360.00	1.27.2
					-	
10	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				-	1.24

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
10.1	Telephone socket outlet	18.00	Nos	168.00	3,024.00	1.24.6
10.2	TV antenna socket outlet	15.00	Nos	168.00	2,520.00	1.24.7
10.3	Internet point RJ 45 (with Shutter)	17.00	Nos	584.00	9,928.00	M/R
					-	
11	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.				-	1.20
11.1	25 mm	200.00	Mtr	289.00	57,800.00	1.20.2
11.2	32 mm	100.00	Mtr	360.00	36,000.00	1.20.3
					-	
12	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				-	1.21
12.1	25 mm	300.00	Mtr	168.00	50,400.00	1.21.2
12.2	32 mm	200.00	Mtr	209.00	41,800.00	1.21.3
					-	
13	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at –5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.				-	39.17
13.1	1 Run of cable	300.00	Mtr	60.00	18,000.00	39.17.1
13.2	2 Run of cable	200.00	Mtr	96.00	19,200.00	39.17.2
13.3	3 Run of cable	50.00	Mtr	131.00	6,550.00	39.17.3
					-	
14	Supplying and drawing following pair 0.5 mm dia FRLS/HFFR PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as				-	1.18
14.1	1 Pair	200.00	Mtr	33.00	6,600.00	1.18.1
14.2	2 Pair	100.00	Mtr	39.00	3,900.00	1.18.2
					-	
15	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	120.00	Mtr	54.00	6,480.00	1.19
					-	
15.1	Supplying and fixing brass batten/ angle holder including connection etc. as required.	15.00	Nos	154.00	2,310.00	1.34
					-	
	Sub Head-II : (DB'S & MCB'S)				-	
16	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				-	2.3
16.1	12 way , Double door	11.00	Nos	2,871.00	31,581.00	2.3.3
					-	
17	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator).				-	2.4
17.1	4 way (4 + 12), Double door	2.00	Nos	4,377.00	8,754.00	2.4.1
17.2	6 way (4 + 18), Double door	2.00	Nos	5,299.00	10,598.00	2.4.2
					-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
18	Supplying and fixing of following ways surface/ recess mounting, vertical type, 415 V, TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200 A tinned copper bus bar, common neutral link, earth bar, din bar for mounting MCBs (but without MCBs and incomer) as required . (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required)				-	2.5
18.1	4 way (4 + 12), Double door	2.00	Nos	7,951.00	15,902.00	2.5.1
					-	
19	Supplying and fixing Cable End Box (Loose Wire Box) suitable for following single pole and neutral, sheet steel, MCB distribution board, 240 Volts, on surface/ recess, complete with testing and commissioning etc. as required.				-	2.23
19.1	For 14 way, Double door SPN MCBDB	11.00	Nos	990.00	10,890.00	2.23.4
					-	
20	Supplying and fixing Cable End Box (Loose Wire Box) suitable for following triple pole and neutral, sheet steel, MCB distribution board, 415 Volts, on surface/ recess, complete with testing and commissioning etc.as required.				-	2.24
20.1	For 4 way, Double door TPN MCBDB	2.00	Nos	1,177.00	2,354.00	2.24.1
20.2	For 6 way, Double door TPN MCBDB	2.00	Nos	1,223.00	2,446.00	2.24.2
					-	
21	Supplying and fixing Cable End Box (Loose Wire Box) suitable for triple pole and neutral, sheet steel, Vertical MCB distribution board, 415 Volts, on surface/ recess, complete with testing and commissioning etc. as required.	2.00	Nos	1,271.00	2,542.00	2.25
					-	
22	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				-	2.10
22.1	Single pole	170.00	Nos	285.00	48,450.00	2.10.1
22.2	Double pole	6.00	Nos	696.00	4,176.00	2.10.3
					-	
23	Supplying and fixing following rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				-	
23.1	40 amps DP 10 KA MCB	5.00	Nos	1,106.00	5,530.00	M/R
23.2	40 amps TP 10 KA MCB	4.00	Nos	1,628.00	6,512.00	M/R
23.3	63 amps TP 10 kA MCB	4.00	Nos	1,628.00	6,512.00	M/R
23.4	40 amps FP 10 KA MCB	2.00	Nos	2,085.00	4,170.00	M/R
23.5	63 amps FP 10 kA MCB	2.00	Nos	2,085.00	4,170.00	M/R
					-	
24	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board/DB including drilling holes in cubicle panel, making connections, Ics=100% Icu and Operational Voltage 690V etc. as required.				-	
24.1	100 A,30KA,FPMCCB	1.00	Nos	8,127.00	8,127.00	2.2.13
24.2	4 pole 63 A MCCB, 25 KA (Ics=100%Icu, Fixed TM type)	1.00	Nos	7,940.00	7,940.00	MR
					-	
	Sub Head-III : (Earthing & lightning arrestor)				-	
25	Earthing with G.I. earth pipe 4.5 Meter 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.	5.00	Nos	7,658.00	38,290.00	5.2
					-	
26	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 Meter long etc. with charcoal/ coke and salt as required.	8.00	Nos	8,351.00	66,808.00	5.4
					-	
27	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 Meter long etc. with charcoal/ coke and salt as required.	5.00	Set	15,004.00	75,020.00	5.6
					-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
28	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	25.00	Mtrs	1,024.00	25,600.00	5.8
					-	
29	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	20.00	Mtrs	160.00	3,200.00	5.9
					-	
30	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	30.00	Mtrs	1,638.00	49,140.00	5.10
					-	
31	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.	50.00	Mtrs	755.00	37,750.00	5.11
					-	
32	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	25.00	Mtrs	1,246.00	31,150.00	5.14
					-	
33	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	50.00	Mtr	287.00	14,350.00	5.15
					-	
34	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.	1,500.00	Mtr	50.00	75,000.00	5.18
					-	
35	Providing and fixing of lightning conductor finial, made of 25 mm dia 300 mm long, G.I. tube, having single prong at top, with 85 mm dia 6 mm thick G.I. base plate including holes etc. complete as required.	6.00	Nos	609.00	3,654.00	6.1
					-	
36	Jointing copper / G.I. tape (with another copper/ G I tape, base of the finial or any other metallic object) by riveting / nut bolting/ sweating and soldering etc as required.	4.00	Nos	139.00	556.00	6.3
					-	
37	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required.(For horizontal run)	250.00	Mtr	148.00	37,000.00	6.6
					-	
38	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required.(For vertical run)	50.00	mtr	238.00	11,900.00	6.7
					-	
39	Providing and fixing testing joint, made of 20 mm X 3 mm thick G.I. strip, 125 mm long, with 4 nos. of G.I. bolts, nuts, chuck nuts and spring washers etc. complete as required.	6.00	Nos	140.00	840.00	6.10
					-	
	Sub Head-IV : (Light & Fans Fittings)				-	
40	Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current **(BLDC)** Motor, class of insulation: B, 3 nos. metal(Aluminium alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, suitable for operation with regulator for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 0C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC supply, Ceiling Fan compliant to IS 374:2019 fan i/c external connections with 1.5 sq.mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required.				-	
40.1	1200mm, service value ≥ 6.0 CM/Min/Watt, air delivery 210 CM/Min (Minimum)	38.00	Nos	2,695.00	102,410.00	9.2.3
					-	
41	Supplying, Installation, Testing & commissioning of single phase A.C. 230 volt 50 Hz, 300 mm sweep ISI marked, double ball bearing metal body exhaust fan, minimum 1350 RPM i/c louver shutter/bird screen i/c connection testing & commissioning etc. as reqd.	6.00	Nos	3,262.00	19,572.00	M/R
					-	
42	Supplying & Installation of 250 mm plastic body fresh air fan, Min. RPM 1200, Max. power consumption 45watt. i/c making aluminum frame for installation of fresh air fan, i/c connection, testing & commissioning etc. as reqd.	19.00	Nos	2,128.00	40,432.00	M/R
					-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
43	Supplying of Surface type LED Batten mirror light (N.S. 600mm) with aluminium housing, IP 20 rating, minimum 1100 lumen output, colour temperature > 5700K, CRI not less than 80, Luminaries should have 25,000 hrs life @ L70 as per LM 70 and testing as per LM 80, power factor > 0.90, suitable for 220 V - 240 V, system efficiency not less than 110 Lumen per watt, Driver efficiency > 85%, Surge protection - (L-N) 1 KV, (E-L/N) 2 KV, THD < 10%, colour temperature > 5700K, CRI > 80, complete with all accessories etc. as reqd.	17.00	Nos	477.00	8,109.00	M/R
					-	
44	Supplying and fixing LED bulk head fitting, pressure diecast aluminium housing with robust polycarbonate cover, IP66 rating, minimum 700 Lumen output, System efficacy > 110 Lm/W, colour temprature > 6500K, CRI >80, Life >50,000 Hrs @ L70 as per LM 70 and testing as per LM 80 complete with all accessories etc. directly on ceiling/ wall including connections with 3 x 1.5 sqmm FRLS PVC insulated copper conductor single core cable and earthing etc. as required.	10.00	Nos	1,283.00	12,830.00	MR
					-	
45	Supplying and fixing of fancy wall bracket fitting of shining stainless steel base with white frosted glass having with 1 No. 7 / 9 watt LED lamp complete with all accessories etc. directly on wall etc. as required.	20.00	Nos	2,289.00	45,780.00	M/R
					-	
46	Supplying and fixing of . 7 / 9 watt LED bulb in the existing bulb holder complete ec . as required.	15.00	Nos	104.00	1,560.00	M/R
					-	
47	Supplying, Installation, Testing & Commissioning of **LED Recessed/ surface Down lighter (Round/ square/ Rectangular) SMD type** of following body material with PMMA and prismatic diffuser and construction as per IS : 10322 with driver as per the requirement with Driver efficiency >85%, Operating voltage AC 140-270 Volt, frequency 50/60 hz, Operating temp range -50C to 400C, internal surge protection of 2.5 KV with Short & Open circuit protection ,THD < 10% , P. F.≥0.95, IP20, CRI >80, UGR (Unified Glare Rating) < 19, Flicker free (flicker should be below 5%), life time (LED, Driver & electrical circuitry), of minimum 50000 Burning Hours with 70% of initial Lumen maintained till life ends, CCT 3000°K /4000°K / 5700°K / 6500°K (As per ANSI Bin), SDCM (Standard Deviation Colour Matching) <3, Maximum power consumption should not more than the specified rating and Fixture shall be confirming to relevant BIS standards. Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing Complete in all respect i/c external connections with 1.5 sq.mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with				-	
	System lumen efficacy ≥105 and <120 lm/Watt output . LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C) Powder coated die cast /Extruded aluminium Body including trim				-	8.10
47.1	18 watt	68.00	Nos	920.00	62,560.00	8.1.4
					-	
48	Supplying, Installation, Testing & Commissioning of Panel light **2x2 ft.,** of following body material and construction as per IS : 10322 with driver as per the requirement with Driver efficiency >85%, Operating voltage AC 140-270 Volt, frequency 50/60 hz, Operating temp range -5 0C to 40 0C, internal surge protection of 2.5 KV with Short & Open circuit protection ,THD < 10% , P. F.≥0.95, IP20, CRI >80, UGR (Unified Glare Rating) <19, Flicker free, (flicker should be below 5 %), life time (LED, Driver & electrical circuitry), of minimum 50000 Burning Hours with , 70% of initial Lumen maintained till life ends, CCT 3000°K / 4000°K / 5700°K /6500°K (As per ANSI Bin), SDCM(Standard Deviation Color Matching) <3, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard. Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. complete in all respect i/c external connections with 1.5 sq mm FRLS/HFFR, PVC insulated copper conductor single core				-	
	with Minimum 5 year OEM warranty. System lumen efficacy **≥120 <135 lm/Watt** output .LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C).Powder Coated CRCA Sheet Body (Thickness > 0.50 mm)				-	
48.1	36 watt	30.00	Nos	2,225.00	66,750.00	8.7.10
					-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
49	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, frequency 50/60 hz, Operating temp range -5 °C to 40 °C, 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. 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 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 CRCA Sheet Body (Thickness >0.50 mm)				-	
49.1	18- 22 Watt	75.00	Nos	629.00	47,175.00	8.9.5
					-	
50	Supplying, Installation, Testing & Commissioning of **Flood Light**, powder coated pressure die cast aluminium body with built in or separate driver as per the requirement with Driver efficiency >85%, Input voltage: Input voltage: 140-270 Volt AC, frequency 50/60 hz, Operating temp range -5 0C to 50 0C, internal surge protection of 5 KV L,N,E as per IEC 61000-4-5, Driver efficiency >85%,THD < 10% as per IEC 61000-3-2, P. F.≥0.95, IP-66,IK-10, CRI >70, under voltage and over voltage protection, EMI-EMC as per CISPR -15, lenses for beam angle 30 deg-120deg as per the application and the project requirement., suitable tilt able fitting, life time (LED, Driver & electrical circuitry) of minimum 50000 Burning Hours with 70% of initial Lumen maintained till life ends as per LM80 extrapolation IES TM-21-11 report, CCT 3000°K / 4000°K / 5700°K /6500°K (As per ANSI Bin) , SDCM(Standard Deviation Color Matching) <5, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard complete in all respect				-	
	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).				-	
50.1	70 watt	4.00	Nos	2,299.00	9,196.00	8.16.2
50.2	100 watt	2.00	Nos	2,467.00	4,934.00	8.16.3
					-	
51	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, frequency 50/60 hz, Operating temp range -5 0C to 50 0C, internal surge protection of 5 KV L,N,E as per IEC 61000-4-5, Driver efficiency >85%,THD < 10% as per IEC 61000-3-2, P. F.≥0.95, IP-66,IK-10, CRI >70, under voltage and over voltage protection, EMI EMC As per CISPR -15, lenses for beam angle 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 ANSI 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				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	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).				-	
51.1	90 watt	10.00	Nos	2,162.00	21,620.00	8.12.14
					-	
52	Supply and erection of 5.0 m. Galvanised octogonal pole with base plate 220 x 220 x 12 mm, top 70 mm and bottom 130 mm made up of 3 mm thick sheet suitable for max. wind speed upto 160 km/hr. including foundation bolts and HDPE pipe for incoming and outgoung cables and making foundation with RCC reinforcement (500 mm x 500 mm x 900mm), GI base plate, GI anchor plate etc as required. Each pole shall be supplied with a junction/looping box complete with 10 amps, 10 kA DP MCB, Screwless DIN mounting Connectors suitable for 16/25 sq.mm terminations complete with DIN bar, shorting links, end locks etc. as required and 3x1.5 sqmm PVC insulated and PVC sheathed multistrand copper conductor power cable from junction box to the luminaire complete including terminations with copper lugs etc. as required.	10.00	Nos	15,184.00	151,840.00	M/R
					-	
	Sub Head-V : (Solar PV Power Generation)				-	
53	Supplying Installation, Testing and Commissioning of on-grid Solar Photovoltaic Power Plant conforming to various applicable standards BIS, IEC, MNRE guidelines, the Central Electricity Authority Regulations and CPWD Specifications as amended up to date, consisting of Mono/Poly Crystalline silicon solar cells module, net metering facility, necessary control, protections, earthing, cabling, mounting structure, junction boxes, power conditioning units, Real time online web interfaced Data Monitoring System, Distribution panels, grid connecting arrangement, conduits, pipes, cable trays and other accessories etc. as required. a) High Energy Efficiency Solar Photovoltaic Module of capacity 330 Wp or above, manufactured in India, conforming to IS 14286/IEC 61215, IS/IEC 61730 Part-1, IS/IEC 61730-Part-2. Solar Photovoltaic Module conversion efficiency shall not be less than 23% at STC with temperature coefficient of Pmax better than -0.30% per 0C. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Solar Modules shall be designed to operate in relative humidity upto 100% with temperature between -10 0C and +85 0C				-	
	have Radio frequency identification tag with information such as name of manufacturer, month and year of manufacturing, country of origin (separately for Solar cell and module), I-V curve, Unique Serial No and Model No of the module, Wattage, Im, Vm and FF, name of test lab issuing IEC certificate. b)Power Conditioning Unit (PCU) of 350-800 V DC Input voltage range and 415 V AC, three phase, 4 wire, 50Hz +/- 2.5 Hz, output voltage suitable to generate AC with a variation of 10% at nominal voltage. Power with efficiency not less than 97%, total harmonic distortion less than 3% and suitable for ambient temperature from 0 to 50 0C, Minimum IP-65 for outdoor and Minimum IP 21 for indoor, Built-in				-	
	meter and data logger, MPPT, switching devices IGBT/MOSFETs and controller Microprocessor /DSP. PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown. The PCU shall be able to withstand unbalanced load conforming to IEC standard with shutdown/standby mode. It must be provided with grid islanding along with manual disconnect pole isolation switch besides automatic disconnection. Minimum protections: Mains Under / Over Voltage, Over current, Over/Under grid frequency, Over temperature, Surge voltage induced at output due to external source, Short-circuit, Lightening, Anti Islanding (for grid synch. Mode) and other protections as per applicable standards. LCD/LED display of minimum parameters: DC input voltage, DC current, AC Voltage and current (all 3 phases, in case of 3 phase), Instantaneous & cumulative AC output power, Daily DC energy produced and other parameters applicable standard. communication interface RS 485 / RS 232. c) Module mounting structure: The roof top solar plant generation units shall be installed by using supporting Aluminium/Galvanized MS structure (mass of zinc coating shall be as per IS4759) having minimum head room clearance of 2.4 meter above the terrace level / ground level. The mounting structure would be designed to sustain				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	structure shall be design as per applicable BIS code and the material shall also confirm the applicable BIS Code. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. The suitable arrangements for maintenance and cleaning shall be provided. d) Real time online web interfaced Data Monitoring System complete with accessories for various parameters such as Solar Irradiance, temperature, AC Output Voltage and current, Output Power, Power factor, DC Input Voltage and Current, Time Active, Time disabled, Time Idle, Power produced and other parameters as per standard practices. e) Array junction box & Main junction box with IP 65 protection and termination arrangement for incoming and outgoing cable along with glands, lugs and other				-	
	parameter of the site of installation. All the accessories etc. as required. Each junction box shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement with High quality Suitable capacity Metal Oxide Varistors(MOVs) (semiconductor diode with resistant applied voltage)/ surge arrestors and suitable Reverse Blocking Diodes, isolation switches isolate the DC input to Inverter, copper bus bar etc. f) Lightning, surge voltage protection, earthing protection and grid islanding. g) Cables: Connections & Interconnections by required size IR/UV protected XLPE insulated copper conductor 1.1 kV grade armored power and control cables(ISI Marked) along with supplying & fixing of necessary channel/conduit, GI cable trays, supports, lugs, thimble and other accessories etc. as required. h) DC Distribution Board And AC Distribution Panel Board: IP65, free standing, metal cladded, having copper bus bar, having required protection and control gears, connection-interconnection, etc. as required.	10.00	kWp	54,280.00	542,800.00	17.1
					-	
	Sub Head-VI : (Electric vehicle charger)				-	
54	Supplying Installation, Testing and Commissioning of EV charging station As per specifications and in Compliance to relevant IS codes etc.				-	
54.1	Light EV AC Charger (Mode-3) Power : 7 kW, Input power supply: 1phase 230 +10% Volt, output supply: 230 Volt AC, Frequency:50 Hz +/-3%, Operational temperature range : -25 to 55 0C (outdoor), -5 to 55 0C (Indoor)., RH upto 95%, Charging Device as per IS-17017-22-1 EV-EVSE Communication: as per relevant IS Codes, Bluetooth Low Energy, one Charge Point Plug/ Socket as per IS-60309 and IS-17017-2, Vehicle Inlet/ Connector As per EV manufacturer, suitable for 2 Wheelers and 4 wheelers. Indoor use: at least IP42; Outdoor use: at least IP54. Mechanical Strength: protection of the external enclosure against mechanical impact shall be IK08 according to IEC 62262.O/L,S/C protection. Insulation Resistance > 1 M Ω. Cable Length: 7.5 m. RCD having a rated residual operating current not exceeding 30 mA; Separate RCD for multiple outputs. Telecommunication port of the EV supply equipment according to IS 13252 (Part 1): 2010. OCPP(Open charge point protocol) 1.6J upgradable to ocpp 2.0. Device Should follow 17017 series of IS codes in general and the installation of the system shall comply with relevant IS Codes.	1.00	Nos	23,385.00	23,385.00	18.1
					-	
54.2	Light EV DC Charger (Mode 4) Power Level 1: Up to 7 kW, Input power supply: 1phase 230 +10% Volt/3phase 415 Volt, Frequency: 50 Hz +/-5%, output supply: 12/24 Volt DC. Operational temperature range : -25 to 55 0C (outdoor), -5 to 55 0C (Indoor), RH upto 95%, Charging Device as per IS-17017-25, EV-EVSE Communication:IS-17017-25, one Charge Point Plug/ Socket as per IS-60309 and IS-17017-2, Vehicle Inlet/ Connector As per EV manufacturer, suitable for 2 Wheelers and 4 wheelers. Indoor use: at least IP42; Outdoor use: at least IP54. Mechanical Strength :protection of the external enclosure against mechanical impact shall be IK08 according to IEC 62262.O/L,S/C protection. Insulation Resistance > 1 M Ω. Cable Length: 7.5 m. RCD having a rated residual operating current not exceeding 30 mA Separate RCD for multiple outputs. Telecommunication port of the EV supply equipment according to IS 13252 (Part 1) : 2010. OCPP(Open charge point protocol) 1.6J upgradable to ocpp 2.0. Device Should follow 17017 series of IS codes in general and the installation of the system shall comply with relevant IS Codes.	1.00	Nos	350,914.00	350,914.00	18.1.2
					-	
	Sub Head-VII (Networking)				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
55	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 3 Network Switch having features and specifications etc. as mentioned here under: At least 20 X RJ-45 Gigabit Ethernet Ports and additional 4 combo 10/100/1000 base-t/SFP Ports with additional 4 SFP+ ports non-blocking architecture by having Switching capacity of min. 128Gbps and packet forwarding rate of 95Mpps or higher, 16K MAC table. Console Port, USB port, Internal AC Power supply with operating temperature of 0 to +50 0C. Stacking port with stacking support of minimum 8 units per stack. 48K Mac address, 9K or more Jumbo frame, ERPS with enabling ring to converge in less than 50 ms from node or link failure, Static routing, Static, 6to4, ISATAP and GRE, IPv6 Neighbor Discovery (ND), BGP, ISIS, MPLS, VRRP v2, OSPFv2/v3, PBR, Route Redistribution, RIPv1/v2/ng, IP Helper all L3 Protocols should support from day 1 for both IPv6 and IPv4, 802.1x, Port security , Radius				-	
	C TACACS+ authentication C accounting, DAD, DAI, DoS attack prevention, SSH, Guest VLAN, IP Access List, MAC Access List. Multicast: VLAN, PIM-SM, PIM DM, PIM- SDM, PIM-SMv6, DVMRP v3 and MSDP, IGMP C MLD Snooping, Flow mirroring, IGMP C MLD Snooping Querier, Per-VLAN IGMP C MLD Snooping. SNMP, Dual configurations, Multiple images, RMON, LLDP/LLDP-MED, sFlow, DHCP/BOOTP Client, IPv4/IPv6, Syslog server, Debug command, 802.3ah Ethernet Link OAM, 802.1ag Connectivity Fault, Y.1731 OAM, 802.1Qbb Priority-based Flow Control (PFC), Dying Gasp, Cable Diagnostics , 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.	1.00	Nos	193,791.00	193,791.00	39.4
					-	
56	Supplying, Installation, Testing and commissioning of small form-Pluggable (SFP) for Network Switches. Must be hot Pluggable, RoHS Complaint, etc. complete as required.				-	
56.1	1G Copper SFP	1.00	Nos	7,018.00	7,018.00	39.6.2
					-	
57	Supplying, Installation, Testing and commissioning of indoor Wireless Access Point for High density use having features and specifications etc. as mentioned here under- WiFi6 802.11ax 574Mbps (2.4GHz) + 2402Mbps (5GHz), WIFI 6 Certified, 1 x RJ45 console port, MG 2.5G LAN POE Port, factory reset, WPA/WPA2/WPA3™ Personal/Enterprise, WEP 64/128-bit, SSID broadcast disable, MAC address access control, Internal RADIUS server, SNMP, Customizable Captive Portal, Auto Channel, Works as Access Point, WDS, WDS with AP, Wireless Client ., Web (HTTP), Secure Socket Layer (SSL), Traffic control, Support ATF/Fast Roaming/Band Steering, Supports enhanced security – WPA-PSK/WPA2 PSK/WPA3-PSK and RADIUS client, and Cipher negotiation, and MAC/ IP ACL for networks, Certifications: MTCTE, CE, FCC. Works as Standalone, Compatible with S/W & H/W Controller with addtional features like - Real-Time Monitoring and Alerts, Rich Advanced Features, Centralized Device Management, Role-Based Administration, Real-Time Monitoring, VLAN and Access Control, Auto RF Management and Bandwidth Optimization, Multi-SSID and Captive Portal Authentication.OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.	5.00	Nos	35,559.00	177,795.00	39.8
					-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
58	Supplying, Installation, Testing and commissioning of indoor Wireless Controller having features and specifications etc. as mentioned here under- The network controller shall be a dedicated hardware appliance designed for centralized management of wireless access points, It must support the management of up to 500 networking devices, The system should be on-premise, ensuring data privacy and complete control over network configurations. It must include an intuitive user interface for real-time monitoring, device discovery, firmware upgrades, scheduling, and mass configuration deployment. Features such as role-based administration, multi-site management. AP to controller communication shall be use of industry standards-based (IEEE or IETF) CAPWAP or any tunneling protocols as per guidelines of DoT.The controller should support Layer 2 and Layer 3 device discovery, VLAN configuration, MAC ACL groups, IGMP snooping, and bandwidth optimization. Automatic radio frequency (RF) management and access policy enforcement are required for reliable wireless performance. The solution must offer a comprehensive dashboard with network topology, floor plan views, client and device lists, and alert notifications. For authentication, it should support a range of methods including local database, external RADIUS, LDAP, and passcode or MAC-based access. It				-	
	analytics, logs, and customizable reporting for network visibility and planning. Firmware and configuration backup and restoration functions must be available, with USB based log storage supported. Physical specifications should include a compact form factor with a minimum of one 2.5G Ethernet port and USB 3.0 port, and it must be MTCTE,CE, FCC, and RoHS certified. The controller should operate reliably within a 0°C to 40°C temperature range and 10–90% non-condensing humidity. /Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.	1.00	Nos	113,228.00	113,228.00	39.10
					-	
59	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA -568.2-D etc. complete as required.	1.00	Nos	5,278.00	5,278.00	39.11
					-	
60	Supplying, Installation, Testing and commissioning of following CAT6A Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.				-	
60.1	Copper Patch Cords of length 1m (3ft)	20.00	Nos	173.00	3,460.00	39.13.1
					-	
61	Supplying, Installation, Testing and commissioning of CAT6A Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	15.00	Nos	302.00	4,530.00	39.15
					-	
62	Supplying, drawing, Testing and commissioning of Cat6A UTP 4 pair, 23 AWG solid copper cable in existing conduit/ on surface, U/FTP, LSZH, Non Plenum, Horizontal (solid) Cable suitable for high speed data networking application supporting upto 10Gbps over a 100 meter channel. The 4 Unshielded Twisted Pairs (UTP) cable with color coded insulation for easy indentification should have FLAME PROPERTIES i.e. Flammability Test - IEC 60332-1, Smoke Density - IEC 61034, LSZH standards compliance: ANSI/TIA-568 C.2, ISO/IEC 11801, IEEE 802.3an, RoHS. Delay Skew should be < 45NS. The outer Cable Diameter should be 7.5 + 2 mm. Cable should have been tested and verified by UL/ ETL etc. complete as required.				-	39.18
62.1	1 Run of cable	250.00	Mtr	74.00	18,500.00	39.18.1
62.2	2 Run of cable	150.00	Mtr	124.00	18,600.00	39.18.2
62.3	3 Run of cable	50.00	Mtr	174.00	8,700.00	39.18.3
					-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
63	Supplying and fixing Patch Cord of Optical Fiber Multi Mode or Single Mode LC to LC Fiber Duplex having high precision ceramic ferrule with good concentricity, Fiber corning single mode G652D, Cable Type 2mm with Mechanical specification Apex Offset < 50 µm, Fiber Height + 100 nm, End-face radius of Curvature 7mm < R < 0.2 db, Working ambient Temperature – 5 0C to +50 0C, Storage Temperature – 10 0C to +50 0C, Length -- 2meter, Type -- LC-LC Duplex etc complete as required.	2.00	Nos	705.00	1,410.00	39.22
					-	
64	Supplying and fixing 24U Rack with 4 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.25mm Powder Coated CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 5nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL-7035 or black, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required.	1.00	Nos	21,201.00	21,201.00	39.24
					-	
	Sub Head-VIII (UPS)				-	
65	Online UPS- Input supply: Three Phase, Output supply: Three Phase. Supplying, installation, Testing & Commissioning of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 0C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swapable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of modules required for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch along with provision for manual bypass, suitable isolation transformer for additional protection against neutral faults etc. UPS shall have inbuilt phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for				-	
	reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant Inter-national standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1), however UPS shall be suitable to take load at 0.7 laging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level				-	
	at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. . Communication RS232/RS485/SNMP port open protocol for BMS integration, all hardware & software for iOT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c)				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	Voltage, Capacity. e) Load: KVA, KW, Percentage. f) Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load / UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location etc				-	
65.1	10KVA (Each Power module shall be < 10 KVA)	1.00	Nos	208,893.00	208,893.00	26.2.1
					-	
	Sub Head-IX : (Electrical Panel & Cable)				-	
66	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.				-	
66.1	63 mm dia (OD-63 mm & ID-51 mm nominal)	700.00	Mtr	289.00	202,300.00	15.16.1
66.2	90 mm dia (OD-90 mm & ID-76 mm nominal)	80.00	Mtr	336.00	26,880.00	15.16.2
					-	
					-	
67	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/DWC pipe** as required.				-	
67.1	Upto 35 sq. mm	280.00	Mtr	47.00	13,160.00	10.5.1
67.2	Above 35 sq. mm and upto 95 sq. mm	570.00	Mtr	72.00	41,040.00	10.5.2
67.3	Above 95 sq. mm and upto 185 sq. mm	80.00	Mtr	97.00	7,760.00	10.5.3
					-	
68	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing **masonry open duct** as required.				-	
68.1	Upto 35 sq. mm	20.00	Mtr	36.00	720.00	10.6.1
68.2	Above 35 sq. mm and upto 95 sq. mm	60.00	Mtr	58.00	3,480.00	10.6.2
68.3	Above 95 sq. mm and upto 185 sq. mm	20.00	Mtr	80.00	1,600.00	10.6.3
					-	
69	Supplying of one number PVC insulated and PVC sheathed / XLPE armoured aluminium conductor power cable of 1.1 KV grade of following sizes etc. as required.				-	
69.1	2C x 10 Sqmm.	300.00	Mtr	191.00	57,300.00	MR
69.2	3.5C x 50 sqmm.	250.00	Mtr	715.00	178,750.00	MR
69.3	3.5C x 95 sqmm.	400.00	Mtr	1,272.00	508,800.00	MR
69.4	3.5C x 120 sqmm.	80.00	Mtr	1,606.00	128,480.00	MR
					-	
70	Supplying of earthed armoured, aluminium conductor XLPE power cable of 11 KV (E) grade confirming to IS 7098 (Part-II) amended upto date as per the following size.				-	
70.1	3C x 70 sqmm.	80.00	Mtr	1,584.00	126,720.00	MR
					-	
71	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required:				-	
71.1	70 sq. mm	2.00	Nos	12,946.00	25,892.00	23.30
					-	
72	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
72.1	70 sq. mm	2.00	Nos	19,286.00	38,572.00	23.5.1
					-	
73	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				-	
73.1	Upto 120 sq. mm	80.00	Mtr	628.00	50,240.00	22.1.1
					-	
74	Supplying, installation, testing & commissioning of **Outdoor Feeder LT panel** having IP 54, suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having minimum area of 2 sq meter fabricated in compartmentalized design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having 200 Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 25 MVA for 1 Sec., bottom base channel of MS section with suitable thickness, fabrication shall be done in transportable sections, entire panel shall have a common GI earth bar of size 20 mm x 6 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with 2.5 sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-.				-	
	FEEDER PILLAR PANEL-2 (OUTDOOR TYPE IP54)				-	
	INCOMER				-	
	125A FP 36KA MCCB Thermal Magnetic based with O/L & S/C Protection Release-1 No				-	
	Spreader Links- 1 No				-	
	Extended Rotary Handle- 1 No				-	
	6A SP MCB 10KA- 4 Nos				-	
	Digital Multifunction meter class-1.0---1 No				-	
	R/Y/B Phase Indication Lamps- 3 Nos				-	
	CT's 150/5A, 15 VA, Class-1.0 for metering- 3 Nos				-	
	BUS BAR				-	
	200 A TPN Alum. BUS BAR 50Hz				-	
	OUTGOING				-	
	100A FP 36KA MCCB Thermal Magnetic based with O/L & S/C Protection Release- 4 Nos				-	
	Spreader Links- 4 Nos				-	
	Extended Rotary Handle- 4 Nos				-	
	Etc. complete as required.	2.00	Set	200,644.00	401,288.00	MR
					-	
75	Supplying, installation, testing & commissioning of **Outdooor Feeder LT panel** having IP 54, suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having minimum area of 1.8 sq.meter fabricated in compartmentalized design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having 300 Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 25 MVA for 1 Sec., bottom base channel of MS section with suitable thickness, fabrication shall be done in transportable sections, entire panel shall have a common GI earth bar of size 20 mm x 6 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-**.(Main Feeder Panel)**				-	
	FEEDER PILLAR PANEL-2 (OUTDOOR TYPE IP54)				-	
	INCOMER				-	
	250A FP 36KA MCCB Thermal Magnetic based with O/L & S/C Protection Release- 1 No				-	
	Spreader Links- 1 No				-	
	Extended Rotary Handle- 1 No				-	
	6A SP MCB 10KA- 4 Nos				-	
	Digital Multifunction meter class-1.0---1 No				-	
	R/Y/B Phase Indication Lamps- 3 Nos				-	
	CT's 250/5A 15VA Class-1.0 for metering- 3 Nos				-	
	BUS BAR				-	
	300A TPN Alum. BUS BAR 50Hz				-	
	OUTGOING				-	
	125A FP 30KA MCCB Thermal Magnetic based with O/L & S/C Protection Release - 2 Nos				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	Spreader Links - 2 Nos				-	
	Extended Rotary Handle - 2 Nos				-	
	100A FP 30KA MCCB Thermal Magnetic based with O/L & S/C Protection Release - 2 Nos				-	
	Spreader Links - 2 Nos				-	
	Extended Rotary Handle - 2 Nos				-	
	63A FP 30KA MCCB Thermal Magnetic based with O/L & S/C Protection Release - 2 Nos				-	
	Spreader Links - 2 Nos				-	
	Extended Rotary Handle - 2 Nos				-	
	Etc. complete as required.	1.00	Set	299,605.00	299,605.00	MR
					-	
					-	
76	Supplying, installation, testing & commissioning of **Feeder LT panel** having IP 54, suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having minimum area of 1.8 sq meter fabricated in compartmentalized design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having 125 Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 25 MVA for 1 Sec., bottom base channel of MS section with suitable thickness, fabrication shall be done in transportable sections, entire panel shall have a common GI earth bar of size 20 mm x 6 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with 2.5 sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :- **(Common service Panel)**				-	
	INCOMER				-	
	100A FP 36KA MCCB Thermal Magnetic based with O/L & S/C Protection Release - 1 No.				-	
	Spreader Links - 1 No				-	
	Extended Rotary Handle - 1 No				-	
	6A SP MCB 10KA - 4 Nos				-	
	Digital Multifunction meter class-1.0- 1 No.				-	
	R/Y/B Phase Indication Lamps- 3 Nos.				-	
	CT's 100/5A 15VA Class-1.0 for metering- 3 Nos				-	
	BUS BAR				-	
	125A TPN Alum. BUS BAR 50Hz				-	
	OUTGOING				-	
	40A DP MCB 10KA - 4 Nos				-	
	63A FP 25KA MCCB Thermal Magnetic based with O/L & S/C Protection Release - 4 Nos				-	
	Spreader Links - 4 Nos				-	
	Astronomical switch-1 No.				-	
	Extended Rotary Handle - 4 Nos				-	
	Etc. complete as required.	1.00	Set	179,178.00	179,178.00	MR
					-	
77	Fabrication, Supplying, Installation, Testing and Commisioning of 6- comp. **meter board** 1500mm (H) x 1200mm (W) x 250 mm (D) Made out of 2mm thick CRCA sheet having IP42 Ingress Protection , floor mounted cubical type on CC structure complete with live/neutral copper bus bars, earth bar, rubber gasket etc inter connection with ,cable entry will be Top & Bottom, RYB indication LED, duly eppoxy coated & numbering etc complete job with following:-				-	
	6-compartment of individual compartment size 400mm (H) x 400mm(W) x 250mm (D) suitable for accomadating of 6 nos. existing single phase energy meter mounting arrangement shall be provided with 5 mm thick bakalite sheet for fixing of enrgy meter and Supplying and fixing of 63 Amp. DP Isolator -6 nos duly mounted on rail each of 6 compartment i/c neutral link and shall have front hinged cover with acrylic sighting window of suitable size of mesh and glass cover and pad lock for sealing etc. One centrally located vertical compartment of 400mm width (N.S.) for 10 FRLSH wire with thinmbles sqmm loose wires having knock out on side panel for wire entry to each compartment and with front openable cover etc as reqd. on top of meterboard it should included 6 nos 63 A rated individual connector One compartment at bottom of height x width of 400mmx400mmx 250 mm deep having 1 no. 100 amps. 36 KA FP MCCB & 150 amp capacity 4 strip Aluminium bus bar supported on SML bracket with front hinged knock out on side panel for wire entry to each compartment and with front openable cover etc. as equired.	1.00	Nos	85,659.00	85,659.00	MR
					-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	Sub Head-X : (EPBAX/IPBAX System)				-	
					-	
78	Supplying, Installation, Testing & Commissioning of Type 1 IP Phone having 2 VoIP account, 120 x40 DOT matrix screen with backlight, Full HD duplex speaker phone, IPV6, Gigabit Etherent, PoE etc. complete as required.	2.00	Nos.	11,698.00	23,396.00	38.30
					-	
79	Supplying, Installation, Testing & Commissioning of Analog phones having standard feautres like 16 digit LCD display, 2 way speaker, caller ID and number storage facility etc. complete as required.	10.00	Nos.	1,544.00	15,440.00	38.40
					-	
80	Supplying, installation, testing and Commissioning of IP based voice communication system of 40 Analog Extention, 2 Digital Extention, 8 SIP Extention, and 3 Trunk Extention Speed Dial, Music on Hold, Internal/ External ring difference, Call Barring, Call Pickup etc complete as required.	1.00	Set	100,775.00	100,775.00	M.R.
					-	
81	Supplying, Installation, Testing & Commissioning of 20 Pair MDF Box (Crone Box) with 1x10 Pair Telephone Punching Module etc complete as required.	2.00	Set	7,054.00	14,108.00	M.R.
					-	
82	Supplying and drawing following pair 0.5 mm dia FRLS/HFFR PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as				-	
82.1	2 Pair	250.00	Mtr	39.00	9,750.00	1.18.2
82.2	4 Pair	50.00	Mtr	53.00	2,650.00	1.18.3
					-	
	Sub Head-XI : (CCTV)				-	
83	Supplying Installation Testing and Commissioning of **4MP IP IR Dome Camera** having following specifications and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: > 50 dB,Camera should display Camera title, Date & Time in live & recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking. 3) Compression (Minimum): Video:- H.265 or better, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120dB or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming , configurable Main stream: 4MP (2560×1440)25/30fps , Sub streams minimum: 720P@25/30 fps 7) Image Setting: Rotate Mode, saturation, brightness, contrast,				-	
	8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, video encryption, IP/MAC filtering, HTTPS, trusted upgrade 9) Onboard Storage: Camera should support built-in Micro SD/ SDHC/ SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card. 10) Recording Management: Format SD, overwrite, storage management, video to NAS device, 11) Alarm Trigger : Motion/tampering detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12)Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS 14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VDC/PoE (802.3af)/ePoE				-	
	18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS.				-	
83.1	**4MP** @ 25/30fps@1440P (2560 x 1440) **Dome Camera** with 2.8/ 3.6/ 6/8/12 mm fixed lens (as per site requirement).	6.00	Nos	10,365.00	62,190.00	40.3.1

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
					-	
84	Supplying Installation Testing and Commissioning of **4MP IP IR Outdoor Bullet Camera** having following specifications and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: > 50 dB,Camera should display Camera title, Date & Time in live & recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking. 3) Compression (Minimum): Video:- H.265 or better, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120dB or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming , configurable Main stream: 4MP (2560×1440)25/30fps Sub streams minimum: 720P@25/30 fps				-	
	7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, video encryption, IP/MAC filtering, HTTPS, trusted upgrade 9) Onboard Storage: Camera should support built-in Micro SD/ SDHC/ SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card. 10) Recording Management: Format SD, overwrite, storage management, video to NAS device, 11) Alarm Trigger : Motion/tampering detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12)Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS 14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement.				-	
	16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VDC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS				-	
84.1	**4MP** @ 25/30fps@1440P (2560 x 1440) Outdoor **Bullet Camera** with 2.8/ 3.6/6/8/12 mm fixed lens (as per site requirement)	9.00	Nos	10,063.00	90,567.00	40.4.1
					-	
85	Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having specifications and features etc as mentioned below : 1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP camera or more and must be ONVIF with minimum support of 384 Mbps incoming Bandwidth. 2) NVR should support video compressions : H.265 or better, H.264, MJPEG. 3) Must support 1 channel RCA Input, 2 channel RCA Output for Two-way Talk with G.711U/A, G.711u, PCM, G726 audio compressions. 4) Intelligent auto power on when power resumes after power outage. 5) Storage: It should support minimum 8 SATA Slots with 20TB capacity/ Slot and RAID support of RAID 0/1/5/6/10.				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	6) Connectivity Interface : 2 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232, 1x eSATA Port 7) Backup Interface : Its should have 4 Nosx USB port (2x USB3.0, 2xUSB2.0) 8) Video Output Ports: 2x HDMI and 2 VGA 9) Alarm Ports: It should have 16/8 Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc. 10) Email & SMS Altert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tempring, network disconnection and panic 11) Web & Mobile Application: Web, Mobile app (For iPhone, iPad, Android Phone) for alerts and viewing. 12) Protocols: HTTP, HTTPS, TCP/IP, IPv4/IPv6, UDP, DHCP, DNS, SMTP, UPnP, IP Filter, PPPoE, FTP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need.				-	
	13) Standards: CE, FCC, RoHS, BIS Certified 14) Power Supply : Should support AC100-240V, 50/60Hz Power supply. 16) The VMS application shall support all the features & functionalities of the offered cameras. 17) VMS should consist Licenses for all channels to record Cameras with General, motion detection, intelligent, alarm and POS recording modes. VMS should be provided with Camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality. 18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage. 19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet. 20) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode				-	
	21) It should support Resolution: 32MP; 24MP; 16MP; 12MP; 8MP; 5MP; 4MP; 1080p; 720p; D1; CIF; QCIF 22) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page 23) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm 24) It should have Web and GUI interface. 25) Built-In Artificial Intelligence: NVR should have built-in AI :- - 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection 26) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec and facility to add Name, gender, birthday, address, credential type, credential No., countries & regions and state to each face image. 27) Face & Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type,				-	
	28) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes. 29) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception 30) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email.31) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection. 32) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency 33) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics 34) Analytics by NVR: Perimeter protection and face recognation				-	
85.1	32 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9/16/25/32(36), 2nd screen: 1/4/8/9/16	1.00	No	64,784.00	64,784.00	40.11.1

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
					-	
86	Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSMI, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.				-	
86.1	10TB (Tera bytes)	2.00	Nos.	24,798.00	49,596.00	40.12.4
					-	
87	Supplying, installation, Testing & Commissioning of following capacity at full load (Unity Power Factor) ON LINE Uninterrupted Power Supply (UPS) system suitable for Single Phase input, Single Phase output AC Supply. The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch along with provision for manual bypass, suitable isolation transformer for additional protection against neutral faults etc. The UPS systems shall be Microprocessor based Digital Control, using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter with PWM (Pulse Width Modulation) Technology. The quality of design, manufacturing and inspection process should confirm to the relevant Inter-national standards such as IEC/EN/VDE.				-	
	The operating efficiency of the UPS systems shall be >95% at 100% non-linear loads. Current total harmonic distortion(ITHD)/ total demand distortion (TDD) on the input grid shall be < 5% at 100 %load. (The required LC filters shall be included in UPS cost), extreme power factor kit to be include to limit the input pf to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1) however UPS shall be suitable to take load at 0.7 laging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC single phase 160-270V 50 Hz and delivering output AC supply true sine wave single phase 220/230/240 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins and 150% for 1 minute. Operating temperature 0 to 40 0C, Relative humidity 0-95% non condensing, noise level less than 60db at 1 meter distance, Protection for Under voltage, over voltage, abnormal output voltage, battery over charging, output over current, short circuit,				-	
	battery deep discharge , 10 KV surge. Display for watt/VA,Amp and Voltage power parameters etc. UPS shall comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI) type UPS (as per standard IEC 62040-1, 2 & 3) . The UPS should be with IGBT Based Inverter Technology, Communication RS232/ RS485/ SNMP port open protocol for BMS integration as per approved by Engineering in charge. Required battery racks, DC breaker of suitable rating and interconnecting copper conductor cable of suitable size and connectors and all required accessories are inclusive in the cost. The UPS should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location etc complete as required.				-	
87.1	3KVA	1.00	Nos.	55,233.00	55,233.00	26.1.2
					-	
88	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required				-	
88.1	Copper Patch Cords of length 1m (3ft)	20.00	Nos.	151.00	3,020.00	39.12.1
89	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required					
89.1	15U Rack	1.00	Nos.	13,330.00	13,330.00	39.23.3

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
90	Supplying, Installation, Testing and commissioning of 18-port PoE switch featuring 16× 10/100 Mbps PoE RJ-45 ports, 2× 1 Gbps RJ-45 uplink ports, and 1× SFP uplink port. The switch supports IEEE 802.3af/at PoE, delivering up to 250 W total PoE budget, and enables extended PoE and data transmission up to 250 m at 10 Mbps in Extend Mode. It delivers non-blocking switching bandwidth of 9.2 Gbps, with ultra-low forwarding delay (≤ 10 µs), and supports DIP-switch selectable modes—Normal, VLAN isolation, and extend—for flexible deployment. Features include MDI/MDIX auto-flip, 802.3x flow control, DIP control, and enhanced 6 kV lightning protection. The unit is fan-less for silent operation etc as complete reqd.	1.00	Nos	14,396.00	14,396.00	M/R
					-	
91	Supplying, installation, testing and commissioning of 55 inch 4K ultra HD LED Display with resolution of 3840 x 2160 (UHD) or more, High Dynamic Range, operating system (Android/ Google/WebOs) having 3 HDMI ports, 2 USB ports, inbuilt Wi-Fi, LAN port, 20watt output speakers suitable for 230V, 50Hz, Single phase AC supply along with necessary wall mounted stand with Voice control remote etc. complete as required.	1.00	Nos.	34,552.00	34,552.00	M.R.
					-	
92	Supply and erection of 5 Meter high hot dip galavanised iron (G.I) pole suitable to mount CCTV camera with mounting bracket with octogonal/circular cross section ,having wall thickness 3 mm., including excavtion in oridinary soil etc and providing suitable RCC foundation with suitable dia foundation bolts, RCC 1:1.5:3 foundation shall be of size 300x300mm and depth 900 mm or as specified by OEM. This reinforcement shall conform to IS:1786 latest edition. The foundation shall extend above surrounding ground/driveway level for 100 mm etc complete as required.	3.00	Nos.	14,212.00	42,636.00	M/R
					-	
	Sub Head-XII : (DG Set)				-	
					-	
93	Supply, installation, Testing & Commissioning of 'Silent Type Diesel Generating set as per CPCB IV + or better norms along with having Prime Power Rating of KVA as below, 415 volts at1500 RPM, 0.8 lagging power factor at 415 V suitable for 50 Hz, 3 phase system & for 0.85 Load Factor, including testing at factory and site with fuel, load for test and other necessary arrangements Complete as per CPWD specifications, should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location, rating plate as per relevant IS Code etc. and consisting of the followings:				-	
	(A) Diesel Engine: Tourbo charged Diesel engine 4 stroke water cooled, multi cylinder, dynamically balanced fly wheel, electric start of suitable BHP at 1500 RPM suitable for above output of alternator at 40Degree C, 50% RH & at 1000 Meter MSL , capable of taking10% over loading for one hour after 12 hours of continuous operation. The engine will be with Electronic governor, Dry type Air filter with service indicator, first filling of engine fuel (after commissioning) lubricating Oil, Coolant and other consumables complete with all the required accessories, the Electronic governor shall be as per ISO 8528.The engine shall comply to the latest CPCB norms (CPCB IV + or better) and Conforming to BS 5514, BS 649, IS 10000, IS 10002, IS 13018 and as per CPWD specifications. (B) Engine mounted Instrument Panel fitted with and having digital dis Plate for following: (i) Start-stop switch with key (ii) Water temperature indication (iii) Lubrication oil pressure indication (iv) Lubrication oil temperature indication (v) Battery charging indication and Voltage indication (vi) RPM indication (vii) Over speed indication (viii) Low lubrication Oil trip indication (ix) Engine Running Hours indication (x) Fuel Level (C) Alternator:				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	Synchronous alternator rated of appropriate KVA, 415 volts at 1500 RPM, 3 phase 50 Hz, AC supply with 0.8 lagging power factor at 40 Degree C, 50% RH & at 1000 Meter MSL. The alternator shall be having Screen Protected Drip Proof (SPDP) enclosure IP23, brushless, continuous duty, dynamically balanced rotor, capable of taking 10% over loading for one hour after 12 hours of continuous operation, self cooled, self-excited and self-regulated through AVR conforming to IS13364(Part 2)/IS: 4722/BS 2613 suitable for tropical conditions and with class- H insulation. (D) Base Frame & Foundation: Both the engine and alternator shall be mounted on suitable base frame made of MS channel with necessary reinforcement which shall be installed on suitable cement concrete foundation and vibration isolation arrangement as per recommendations of manufacturer. (E) FUEL TANK: Daily service fuel tank of suitable litres capacity as per CPWD Specifications, fabricated out of 3 mm thick M.S. sheet complete with all standard accessories and fuel piping between fuel tank and diesel engine with MS class 'C' pipes of suitable dia. Complete with valves, level indications & accessories as required as per specifications. (F) Exhaust System: Dry exhaust manifold with hospital type exhaust silencer and catalytic convertor				-	
	(G) Starting System: 12V/24V DC starting system comprising of starter motors: voltage regulator and arrangement for initial excitation complete with suitable numbers of batteries (180 AH capacity lead acid SMF type) as required as per specifications. The battery shall be housed inside the acoustic enclosure of DG Set. (H) Acoustic and weather proof enclosure with arrangement for fresh air intake for cooling of the engine & alternator, extraction, discharging hot air in to the atmosphere and the temperature rise inside the enclosure, noise level outside enclosure. The acoustic enclosure should be suitable for cable connection/connection through bus-trunking. Such arrangements on acoustic enclosure should be water proof &dust-proof conforming to IP-65 protection. The enclosure shall be as per CPCB IV + or better norms etc. and as per CPWD specifications.				-	
	(I) AMF Panel: Free standing floor mounted IP 42 automatic mains failure control panel including auto by-pass, suitable for KVA as below for silent type DG set complete with relays, timers, set of CTs for metering & protection and energy analyser to indicate currents, phase and line voltages, frequency, power factor, KWH, Kilo Volt Ampere Reative Hour (KVARH), KVA (Phase & Total), KW & provision for overload, short circuit, restricted earth fault, under frequency, power (aluminium) and control (copper) cabling of suitable size upto 15 meter between AMF panel, LT Panel and DG Set including connection interconnection etc. as required, all complete and inter locking and communication/ Ethernet /RS485/SNMP port open protocol for BMS integration including suitable software, the panel shall be of DG Set OEM make etc. as per approved by Engineering in charge and including the following: 1. Suitable numbers and appropriate capacity 4 pole motorised electrically operated draw out with cradle type 3 position ACB/ MCCB with electronic release for O/C & E/F and shunt trip. 2. Auto/Manual/Test/Off selector switch 3. Protection for under and over voltage phase reversal (2 nos Over voltage relay, 2 Nos. reverse power relay and 2 Nos. under voltage relay). 4. 3 Sets of current transformers 15 P 10 accuracy for				-	
	8. Battery charger, complete with transformer/ rectifier, D.C. voltmeter and ammeter, selector switch for trickle, off and boost and current adjustment. 9. Main supply failure monitor 10. Supply failure timer 11. Restoration timer 12. Control unit with three impulse automatic engine start/stop and failure to start lockout. 13. Impulse counter with locking and reset facility. 14. ON/OFF/Control circuit switch with indicator 15. Audio/Video annunciation for (i) High water temperature (ii) Low lubricating oil pressure (iii) Engine over speed (iv) Engine fails to start (v) Full load/maximum load warning				-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	16. Protection for over/under Frequency, Loss of AC sensing, Over Current, Unbalancing load with suitable number of relays and accessories 17. Maintenance notification based on Engine Run Hour & due date. 18. Load Management through PLC to achieve auto opening and closing of incomer breakers, bus coupler switching of essential panel, interlocking providing signal to AMF Panel for load status and AMF shall give command to DG Set to auto start / auto stop depending upon load status and requirement etc. and necessary hardware and software required to perform the operation shall be provided by the contractor including all control wiring.				-	
93.1	62.5 KVA	1.00	Nos	597,453.00	597,453.00	29.1.5
	Sub Head-XIII : (Sub-station Equipments)					
94	Supplying, installation, testing and commissioning of following capacity (continuous loading) BEE 3 Star rated (Corresponding Level as per BIS amended upto date of receipt of tender) , 11/0.433 KV step down, 3 Phase, 50 Hz, Dyn 11 vector group, KNAN [K(K-Class insulating liquid) Natural Air Natural] copper wound transformer (Electrolytic grade 99.9% pure copper, Core made of first grade Cold Rolled Grain Oriented (CRGO) Core grade MOH or better),Dielectric material shall be type -A, suitable for out door/indoor applications with Offload Tap Changer in range of +5% to -15% in steps of 2.5%, having cable end boxes on HV side suitable for 3x300 sqmm XLPE cable of 11 KV grade, including bus trunking arrangement on LV side including supplying and laying of copper conductor multicore control cable from transformer to HT breaker/panel for safety tripping, complete with all accessories and safety provisions as per relevant IS 1180 (Part-3) including first filling of filtered dehydrated Synthetic organic Ester oil, i/c supplying and grouting of suitable M.S. Channel with all accessories and transformer shall be confirming to IS : 2026 (Part 1 to Part 5), IS : 1180 (Part-3) and as per CPWD specifications complete in all respects etc as required at site. The maximum flux density in any part of the core and yoke at rated voltage and frequency shall be such that the flux density with +12.5 percent combined voltage and frequency variation from rated voltage and					
	The permissible temperature-rise shall not exceed 400C for oil and 450C for winding up to 200 KVA and 450C for oil and 500C for winding for above 200 KVA. Inside of tank shall be painted with varnish or liquid resistant paint. For external surfaces one coat of thermo setting powder paint or one coat of epoxy primer followed by two coats of polyurethane base paint shall be used. IS: 1180 (Part 3) shall be referred for paint thickness for normal to medium corrosive atmosphere. For highly polluted atmosphere and special application external paint work shall be as per direction of Engineer-in-Charge. Design ambient condition : a) air temperature 500C, b) Relative Humidity 90 % Max, c) Seismic Zone as per location of site, d) Altitude as per location/site. Noise level Shall not exceed limits as per NEMA TR-1 with all accessories running measured as per IEC 551 / NEMA standard. The transformer should have QR code which should contain drawing, test report OEM manual,Geo-Tag of manufacturing location etc. Marking Each transformer shall be provided with rating plate made of anodized aluminum/ stainless steel material securely fixed on the outer body, easily accessible,as per IS: 1180 Part- 3. The entries on the rating plate shall be indelibly marked. Fitting and Accessories : The following fittings shall be provided:- a) Two earthing terminals with the earthing symbol b) Oil level gauge indicating oil level at minimum, 30°C and maximum operating temperature; c) Air release device (for non-sealed type transformers) d) Rating and terminal marking plates; e) Silica gel breather f) Drain-cum-sampling valve (¾″ nominal size thread, IS 554) preferably steel with plug for three phase transformers;					

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	g) Thermometer pocket with cap; h) Oil filling holes having (1¼″ nominal size thread) with cover (for sealed type transformers without conservator); i) Lifting lugs for the complete transformer as well as for core and winding assembly; j) Pressure relief device or explosion vent above 200 kVA; k) One filter valve on the upper side of the tank (for transformers above 200 kVA); l) Unidirectional flat rollers (for transformers above 200 kVA); m) Inspection hole (for transformers above 200 kVA); n) HV side neutral grounding strip (where one of the HV bushing terminal is connected to earth); o) Buchholz relay for transformers above 800 kVA. p) Arcing horns or suitable rating lightning arrestors for HT side – 3 Nos. q) Bird guard; r) Oil temperature indicator and winding temperature indicators for transformers above 200 kVA with suitable tripping mechanism above permissible limit s) Jacking pads (for transformer above 1 600 kVA); t) Additional Neutral separately brought out on bushing for earthing. u) Magnetic oil level gauge (for transformer above 1600 kVA) with low oil level alarm contact; v) Non return valve (for conducting pressure test); w) Pressure relief device or explosion vent x). Monogram Plate y) Inspection cover z). Detachable type radiators with top and bottom shutoff valve. aa) Oil Conservator with Oil level indicator, minimum level marking and drain plug for all transformers of capacity 50 KVA and above. bb) Necessary hardware, clamps, lugs etc. for termination on HV/MV etc. for all transformers.					
94.1	100 KVA	1.00	Nos	187,154.00	187,154.00	24.22.2
95	Supplying, Installation, Testing & Commissioning of outdoor type 11KV Switchboard (1IC + 2OG) panel. free standing, floor mounted, extensible, dust and vermin proof with bottom cable entry, fabricated from 2.0 mm CRCA sheet steel, powder coated of approved shade after 7 tank treatment process, Copper Electrolyitc Grade busbar, insulators, Sleevs, Hardware, 'control wiring with 2.5 sqmm FRLSH wire, conforming to relevant IS/IEC standards for high voltage switchgear assemblies. The panel have following specification					
	11 KV (1IC+2OG) VCB+LBS Switchboard					
a)	**Vacuum Circuit Breaker**					
	11kV, 800A, 26.3kA for 3 sec - 1 No.					
	Closing Coil: 24V D C- 1 No.					
	Shunt Trip: 24V DC - 1 No.					
	Spring Charging Motor : 230V AC - 1 No.					
	Mannual Charging Handle - 1 No.					
	Antipumpming Inbuilt, Operation Counter, Mech Indication - 1 No.					
	Load Break Switch (LBS)					
	11kV, 630A Mannual LBS - 2 Nos.					
	11KV HRC Fuse 10A- 6 Nos.					
b)	**Current Transformers**					
	Single Phase Two Core CT STC 18.5kA Metering Core 20/1 20/1 Cl 1 15VA, Protection Core 2 :/1 Cl 5P10, 15VA - 9 Nos.					
c)	**Potential Transformer with Fuses**					
	11kV/√3/110V/√3 ,CL 1.0 100VA - 1 No.					
d)	**Relay**					
	3Ph. O/C+E/F - IDMT - 1 No.					
	Auxiliary Relay 3 Element					
	High Speed Master Trip Relay - 1 No.					
e)	**Meters**					
	MFM Meter - 3 No.					
f)	**Indications**					
	[R Phase Indication]-Red- Cluser LED 22.5mm - 3 Nos.					
	[Y Phase Indication]-Yellow- Cluser LED 22.5mm - 3 Nos.					
	[B Phase Indication]-Blue- Cluser LED 22.5mm - 3 Nos.					
	[Breaker On]-Red- Cluser LED 22.5mm - 3 Nos.					
	[Trip]-Amber- Cluser LED 22.5mm - 3 Nos.					
	[Spring Charge]-Blue- Cluser LED 22.5mm - 1 No.					
	[Trip Ckt]- White- Cluser LED 22.5mm - 1 No.					
	Emergency Push Button - 1 No.					
g)	**Miscellaneous**					
	Control Contactors - 12 Nos.					
	Control MCB - 30 Nos					
	Panel illumination Lamp with door limit switch - 3 Nos					

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
	15A Plug & Socket - 3 Nos					
	L/R switch - 3 Nos					
	TNC Switch 25A 2NO+2NC - 3 Nos					
	Thermostat - 3 Nos					
	Panel space heater assembly - 3 Nos					
	Powerpack 10A 90-230V AC/24V DC - 1 No.	1.00	Nos	800,277.00	800,277.00	MR
	Sub Head-XIV : (LIFT)					
96	Supplying, Installation, Testing and Commissioning of machine room less 13 Passenger (884 Kg) gearless lift having contract speed of 1.0 MPS and serving (G+3) = 4 stops in the lift shaft as per detailed specifications enclosed (i) Speed : 1.0 MPS (ii) Floors: G+3 (iii) Travel: 12 Mtrs (Approx.) (iv) Stops & opening: Same Side (v) Controller: A.C. variable voltage & variable frequency . (vi) Automatic rescue device complete with dry maintenance free batteries as required. (vii) Power- 415 V, 3 Phase, 50 Hz, 4 wires system (viii) Microprocesser based single automatic push button/Simplex collective selective with or witout attendant (ix) Type of doors: (a) Car: Power operated, Nominal size (1500mm x 1500mm), Nominal car door size (900mm x 2000mm) , centre opening horizontal sliding stainless steel (SS 304) scratch proof (hairline finish) (b) Landing doors: Stainless Steel (SS 304) Hairline finish. (x) A hand rail not less than 600 mm long at 900 mm above floor level to be fixed adjacent to control panel in the lift car. (xi) Voice announcement system in the car to announce the position of the elevator in the hoistway as the car passes or stops at a floor served by the elevator. (xii) Engraved brailled lipi on all control switches inside the car and outside the lobbies in addition (xiii) Intercommunication system - Handfree telephone set, in car, one in machine room and other in fire control room					
96.1	G+3 Lift	1.00	No	1,854,461.00	1,854,461.00	M/R
					-	
	Sub Head-XV : (Submersible Pump)				-	
97	SITC of submersible pumping set for drinking water supply having high grade impeller, dynamically balanced stainless steel shaft of suitable HP (but not less than 7.5 HP suitable for star delta/DOL starter) submersible motor with non aging water proof insulation to run on 3 phase 415 volt 50 Hz. A.C. supply capable of delivering 300 lpm at 48 mtr. complete of suitable size i/c lowering of all the length of coloum / delivery pipe with water proof jointing of cables etc. complete as required.	2.00	Set	71,509.00	143,018.00	MR
					-	
98	SITC of fully Automatic Star Delta Starter suitable for 10 HP Submersible borewell pump in outdoor type metal box enclosure i/c connection etc. complete as required.	2.00	Nos	20,204.00	40,408.00	MR
					-	
99	Supplying & fixing PVC insulated PVC sheathed copper conductor submersible flat cable ISI Marked in existing metal/ HDPE / PVC/ pipe/ in bore well/ in sump including fixing the cable to GI/HDPE pipe with suitable cable tags of following sizes etc. complete as required 3 Core 6 Sq mm Flat Cable	250.00	Mtr	266.00	66,500.00	20.28.4
					-	
100	Supplying and fixing of supporting steel rope of 10 mm dia size to be used with submersible pumps while lowering down the pump including binding with U clamps etc complete as required.	200.00	mtr	107.00	21,400.00	MR
					-	
	Sub Head-XVI: (Split AC)				-	
101	Supplying, Installation, Testing and Commissioning of Air Cooled Hi Wall split type Air conditioners complete with Indoor unit(IDU), Out door unit (ODU), surface / concealed copper Refrigerant piping with insulation (closed cell elastomeric nitrile rubber tubular pipe section) upto 3 Mtr (IDU to ODU), copper power cable upto 3.5 Mtr (IDU to ODU) i/c drain pipe R-32/R-410/ R-407 Green Refrigerant, wireless Remote control, suitable for working between 180 260V with low & high voltage cutoff and 50 hz ,1 phase AC supply capable of performing cooling, dehumidification, air circulation of following capacity with Scroll / rotary compressor. The system shall be able to deliver 100% of the rated capacity upto 42 0C. Min 5 year Original Equipment Manufacturer (OEM) warranty both compressor and Printed Circuit Board (PCB). Must comply : Electrical cable IS 694 or IS 9968 temperature sensing control IS /International Electrotechnical Commission (IEC) 60730, hermetic compressor IS 10617, heat exchanger IS 11329, capacitor IS 2993 and motor IS 12615. Complete as per CPWD specification and IS : 1391 Part II 2023. The system shall be able to operate up to 50 0C (out door ambient temperature). Inverter Type - Cooling only				-	
101.1	1.5 TR with 5 Star BEE Rating	3.00	Nos	43,539.00	130,617.00	32.2.3

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
101.2	2.0 TR with 5 Star BEE Rating	2.00	No s	57,396.00	114,792.00	32.2.4
102	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	38.00	No s	807.00	30,666.00	1.57
	Sub Head-XVII: (Fire Fighting System)					
103	(a) Supplying, installation, testing and commissioning of electric driven terrace pump conforming to IS 12469: 2019 suitable for automatic operation and consisting of following, complete in all respects, as required: (Terrace Pump) (b) Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal as required. (c) Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horiziontal foot mounted type with Class 'F' insulation, conforming to IS-12615: 2018. (d) M.S.fabricated common base plate, coupling, coupling guard, foundation bolts etc.as required. (e) Suitable cement concrete foundation duly plastered and with anti vibration pads.					
103.1	450 lpm at 35 m Head	4.00	No s	91,384.00	365,536.00	27.4.2
104	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 1239/Class -II of IS: 3589 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :					
104.1	65 mm dia	20.00	Mtr	1,955.00	39,100.00	27.7.5
104.2	80 mm dia	20.00	Mtr	2,277.00	45,540.00	27.7.6
104.3	100 mm dia	40.00	Mtr	3,077.00	123,080.00	27.7.7
105	Supplying and fixing single headed **internal hydrant valve** with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required					
105.1	Single headed Gun metal	6.00	No s	8,208.00	49,248.00	27.9.1
106	Supplying and fixing Single headed **external yard hydrant valve** with 1 No. 63 mm dia instantaneous FM Gunmetal/Stainless Steel coupling and cast iron wheel, ISI marked, conforming to IS 5290 (type A) with blank Gunmetal/Stainless Steel cap and chain as required :					
106.1	Single headed Gunmetal	2.00	No	8,208.00	16,416.00	27.10.1
107	Supplying, fixing, testing and commissioning of **butterfly valve** of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :					
107.1	65mm dia	8.00	No s	4,712.00	37,696.00	27.11.3
107.2	80 mm dia	4.00	No s	5,406.00	21,624.00	27.11.4
107.3	100 mm dia	2.00	No	7,271.00	14,542.00	27.11.5
108	Providing, installation, testing and commissioning of **non-return valve** of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required :					
108.1	80 mm dia	4.00	No s	8,255.00	33,020.00	27.14.4
108.2	100 mm dia	4.00	No	11,853.00	47,412.00	27.14.5
109	Providing, installation, testing and commissioning of stainless steel **Y-strainer** fabricated out of 1.6 mm thick stainless steel, Grade 304, sheet with 3 mm dia holes with stainless steel flange.					
109.1	80 mm dia	4.00	No s	5,117.00	20,468.00	27.15.1

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
110	Supplying and fixing **first-aid Hose Reel** with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required. (a) 20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585 (b) 20 mm nominal internal dia gun metal globe valve & nozzle. (c) Drum and brackets for fixing the equipmets on wall. (d) Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.					
110.1	40 m	8.00	Nos	17,034.00	136,272.00	27.17.2
111	Supplying and fixing of fire brigade connection of cast iron body with gun metal male instantaneous inlet couplings complete with cap and chain as reqd. for suitable dia MS pipe connection conforming to IS 904 as required					
111.1	2 way-100 mm dia M.S. Pipe	2.00	No	7,262.00	14,524.00	27.19.1
112	Supplying and fixing **air vessel made of 250 mm** dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	2.00	No	19,402.00	38,804.00	27.20
113	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	4.00	Nos	1,670.00	6,680.00	27.22
114	Providing and fixing in position industrial type pressure gauges with gun metal / brass valves complete etc. as required.	4.00	Nos	1,491.00	5,964.00	30.8
115	Fabrication, supply, Insallation testing & commissioning of **Fire Fighting Pump Electrical control panel (Outdoor type)** of cubical construction, floor mounted type, fabricated out of 2mm thick CRCA sheet, compartmentalised with hinged lockable doors, dust and vermin proof, powder coated of approved shade after 7 tank treatment process, cable alley, interconnection with suitable size copper conductor cable/solid copper strip, having switchgears and accessories, mountings and internal wiring, earth terminals, numbering etc. complete in all respect, suitable for main fire pump, pressurisation pump complete as per CPWD specification with following in coming and Outgoings, suitable for operation on 415V, 3 phase, 50Hz Ac Supply with enclosure protection class **IP 54** as required :					
	A) Incoming					
	63A, 25 kA 4 Pole MCCB, Ics=100% Icu rating,Thermal magnetic release with rotary operating handle and spreader link Digital Voltmeter 0-500V with selector switch-01 set					
	Digital Ammeter (0-150 A) with selector swtich & CTs etc.					
	LED type RYB phase indicating lamps, ON, OFF, trip					
	B) Bus Bar					
	Electrolytic high conductivity TPN COPPER bus bars of minimum of 100 A at shrinkable coloured sleeves and i/c DMC/SMC bus bar cross section,					
	C) Out going					
	1. 32A, 16kA TPN MCB, Ics=100% Icu, with fully automatic Star/Delta starter suitable for above terrace pumps (min 7.5 HP) with overload protection, current sensing type single phase preventor, phase sequence preventor, provision of Rotor Lock complete with all acceessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation-2 nos.	2.00	Nos	127,758.00	255,516.00	M/R
116	Supplying and installaton following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with two numbers MS/GI Suspenders i/c base of suitable size MS/GI angle, bolts & nuts, painting suspenders, fastener etc as required.					
116.1	100 mm width X 50 mm depth X 1.6 mm thickness	60.00	Mtr	623.00	37,380.00	4.1.1
					-	
117	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required Stainless Steel (Grade 304)	8.00	Nos	4,667.00	37,336.00	27.16.2
					-	

C= NIL
I= NIL
O=NIL

AE(P)(E) .

S.No.	Description of Item	Qty	Uni	Rate	Amount	Remarks
118	Providing & Fixing of stored pressure of 6 Kg Fire Extinguisher ABC powder type (Mono Ammonium Phosphate Powder 90%) Magnetic Pressure Gauge having the facility to check at site, Discharge Time less than 9 Secs, Controllable discharge mechanism, Range minimum 4 Meters, applicable on Class A,B,C and electrically started Fire, A Rating- 21A, B Rating 55B as per BS EN-3 BIS 15683 marked, Can Construction : Deep drawn & CO2 Mig welded, Valve Construction : Forging & Machining, Internal Coating of Can : Epoxy Powder coating, External Coating of Can : Epoxy Polyster Powder coating, Sheet metal thickness : 1.60 MM, Helium Leak Detection Tested, Warranty etc.	6.00	Nos	3,283.00	19,698.00	M/R
					-	
119	Providing and fixing 4.5 Kg carbon-di-oxide type fire extinguishers consisting of welded M.S. cylindrical body, internal discharge tube, discharge nozzle, suspension bracket, conforming to IS 2878, finished externally with red enamel paint and fixed to wall with brackets complete with internal charges.	6.00	Nos	7,836.00	47,016.00	M/R
					-	
	Sub Head-VII : (Fire Alarm System)				-	
					-	
120	Supplying, installation, testing & commissioning of main control and indicating panel made out of 16 SWG MS sheet to accommodate the following items duly powder coated in approved colour with louvers for ventilation, locking arrangement, audio and visual indication for fire alarm and public address system, monitoring system including connections, interconnections etc complete as required. 6 zone panel for fire alarm system 100 watt amplifier racks suitable for operation on 230V AC/24V DC supply conforming to IEC-268-3 complete with all accessories as required- 2 Nos.(one to act as standby) Talk back master station with LED PTT (press to talk) push button for operation on 230V AC/24 V DC supply conforming to IEC-268 for simplex mode of operation/communication suitable for 20 Nos.talk back unit -1 set. Announcement control desk suitable for selection of different zones selectively and ON ALL CALL switch with visual indication etc., complete as required- 1 set. Amplifier change over switch for inter changing amplifier- 1 No. Monitor panel for loudspeaker complete output selector ON/OFF switch, fuse visual indications etc. complete as required- 1 No. Gooseneck microphone with stand and ON/OFF switch -1 No. Mains ON/OFF switch, fuse indication lamps, DC and AC voltmeters & ammeters terminal blocks etc. complete as required -1 set.				-	
	Battery charger trickle cum boost to take complete load of fire alarm & PA system complete with all accessories including providing & fixing of 2 nos. 12 volt, 30 AH each sealed maintenance free batteries -1 set.	2.00	Nos	52,258.00	104,516.00	28.1.11
					-	
121	Supplying, installation, testing & commissioning of **manual call boxes of MS** construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	4.00	Nos	513.00	2,052.00	28.1.3
					-	
122	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	4.00	Nos	600.00	2,400.00	28.1.6
	Total				**13,357,466.00**	

C= NIL
I= NIL
O=NIL

AE(P)(E) .